Ethnic Matching in The Housing Market

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Using Dutch administrative data and the near universe of residential property transactions, we document that homebuyers and homesellers with the same migration background match with each other at rates that substantially exceed random search predictions. Transactions between same-ethnicity buyers and sellers sell at a price discount of around 4%, relative to otherwise comparable transactions. This discount is highly robust and holds across most migrant groups we examine. While around half of the discount can be explained by non-arms-length transactions, the remainder likely reflects ethnic in-group favoritism. Our findings therefore reveal a novel mechanism through which social preferences affect housing market outcomes.

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1. Introduction

Residential segregation has long-run consequences for wealth accumulation and economic opportunity. Discrimination by sellers, brokers, and lenders makes it difficult for ethnic minorities to access desirable neighborhoods (Ihlanfeldt and Mayock, 2009, Christensen and Timmins, 2022, Ambrose et al., 2021), while preferences for co-ethnic proximity and shared amenities may further concentrate minority households in ethnic neighborhoods (Aliprantis et al., 2024, Waldfogel, 2008). Despite extensive evidence on both supply-side discrimination and demand-side sorting, another mechanism has received little attention: the preference of buyers and sellers of the same ethnic background to transact with each other, independently of neighborhood composition.

In this paper, we combine Dutch administrative data with transaction records to identify the exact migration background of every buyer and seller—a level of granularity that is rarely available, especially in the U.S., where individuals are grouped into only five racial categories. We document that buyers and sellers sharing the same migration background transact with each other more often than predicted by random search, even within narrowly defined local sub-markets. This ethnic matching is common to migrant groups that differ widely in migration history and socioeconomic status, and orthogonal to established mechanisms such as seller discrimination or homophily. Matched transactions sell at a price discount of around 4%—approximately €10,000 at the sample mean—relative to otherwise identical properties. Around half of this discount reflects sales to family members or buyers from the same neighborhood, patterns especially prominent among smaller migrant groups. The remaining discount of around 2% points to ethnic in-group favoritism: migrant sellers appear to voluntarily forgo financial surplus when transacting with co-ethnics, a phenomenon documented in experimental settings but not previously identified in housing transactions.

We investigate matching patterns between buyers and sellers with the same migration background using data covering the near-universe of residential property transactions in the Netherlands from 2012 to 2024. Following the approach of Badarinza et al. (2022), we compare, for each neighborhood and migrant group, the unconditional share of sellers from a given group to the corresponding share among buyers from that group. Under random matching, these shares should coincide. Instead, we document substantial deviations from this benchmark: buyers systematically transact with sellers from the same migration background at rates that exceed the group's baseline presence in the local market. For example, in a neighborhood in The Hague, 34% of all sellers have a Turkish migration background, whereas this share rises to 71% among transactions involving Turkish buyers. This pattern holds across all migrant groups and is particularly pronounced for smaller groups, both in terms of their local market activity and their share of the overall homebuyer population.

Next, we examine whether ethnic matching has an effect on transaction prices. Theoretically, this is ambiguous. On the one hand, same-ethnicity transactions may involve a price premium relative to other buyer-seller interactions due to homophily. This could arise if matched transactions more frequently take place in ethnic neighborhoods (i.e., those with a high population share of the buyer's ethnicity), and if migrant buyers are

willing to pay a premium to live in these neighborhoods. Similarly, buyers and sellers with a common migration background may share preferences for certain neighborhood amenities or property characteristics, increasing the buyer's willingness to pay for these attributes relative to other buyers. On the other hand, matched transactions may involve a discount if sellers are willing to offer more favorable prices to buyers who share their ethnic background. This could reflect in-group favoritism which, while documented in other settings, has not been shown in housing transactions. It may also reflect higher levels of trust between in-group members, which could reduce the price sellers require to compensate for uncertainty, for instance if the buyer is still pending mortgage approval. Finally, observed price discounts in same-ethnicity transactions may reflect discriminatory forces, if they are the flipside of price premia that migrant buyers pay when transacting with out-group sellers.

Studying price differentials in ethnically matched transactions amounts to asking whether two identical properties would sell at different prices depending on whether the buyer and seller share the same migration background. Since no transacted property is identical to another, the key challenge is to plausibly control for a property's market value. One strength of the Dutch administrative data is that it provides a comprehensive proxy for this value in the form of tax assessments.[1] These values, which form the basis for various property-related taxes, are publicly available, updated annually and capture market values with high accuracy. To assess whether matched transactions systematically involve different properties, we begin by examining these tax values. Controlling for neighborhood-by-year-quarter fixed effects, we find that transactions between migrant buyers and sellers with the same background involve properties of slightly lower value. However, these differences disappear once we include property-level fixed effects, suggesting that they are driven by time-invariant property characteristics rather than differences in maintenance or very local price dynamics.

To study price differentials, we estimate the gap between a property's tax value and the realized transaction price. Tightly controlling for local market conditions, buyer and seller income as well as their ethnicity per se, we find that transactions between same-ethnicity migrants sell at a discount of around 4% relative to other buyer-seller combinations (e.g., Dutch-to-Dutch transactions). This discount is almost unchanged when property fixed effects are included, suggesting that it is not driven by differences in unobserved property quality.

We conduct several additional tests to assess the robustness of this finding. First, instead of pooling all migrant groups, we estimate separate models for the largest groups active in the Dutch housing market. We find similar discounts across all groups, indicating that the result is not driven by a small number of outliers. Second, we use information on subsequent sales to distinguish price discounts from unobserved quality differences. The intuition is that, if a discount reflects the interaction between buyer and seller rather than quality differences, the subsequent sale of the same property should yield a higher return relative to comparable units. Consistent with this, and controlling

[1] In Dutch, this value is known as a property's *WOZ-waarde*, where "WOZ" stands for "waarde onroerende zaken" (i.e., value of immovable property).

for neighborhood trends as well as the timing of purchases and sales, we find that properties previously transacted between same-ethnicity migrants earn higher subsequent returns, comparable in magnitude to the initial discount.

Taken together, these findings suggest that the observed price discounts reflect transaction-specific factors related to the identity of buyers and sellers, rather than unobserved differences in property or neighborhood characteristics. At the same time, we find little evidence that these discounts are driven by forms of discrimination documented in housing markets. Migrant buyers do not systematically pay higher prices than Dutch buyers when transacting with out-group sellers, nor do they pay higher prices in neighborhoods with a high share of their own ethnic group, suggesting a limited role for taste-based discrimination or steering.

In the final part of the empirical analysis, we investigate the mechanisms behind same-ethnicity price discounts. Around half of the discount can be explained by the fact that same-ethnicity transactions are frequently not conducted at arm's length. To examine this, we use additional information from the administrative data to identify transactions between family members and between individuals living in the same neighborhood. Especially for smaller migrant groups, these non-arm's-length transactions account for most of the observed discount. However, for larger and more established migrant groups, significant price discounts remain even after excluding transactions that are likely not at arm's length.

To further examine the remaining discount, we contrast two candidate mechanisms, trust and altruism, both of which are known to be stronger among members of the same ethnic group. In principle, both mechanisms may lead sellers to offer a discount. On the one hand, real estate transactions involve substantial uncertainty. This is particularly relevant in the Dutch market, where buyers often submit conditional bids while mortgage approval is still pending. Sellers have a strong preference to avoid such uncertainty and are willing to give up financial surplus to do so (Reher and Valkanov, 2024). Higher levels of trust toward in-group buyers could therefore reduce perceived risk and lead to lower prices. On the other hand, discounts may reflect in-group favoritism, i.e., higher levels of altruism toward co-ethnics. Such behavior is well documented and has been shown to affect economic decisions in a range of settings, including donations (Fong and Luttmer, 2009) and lending decisions (Fisman et al., 2017). To distinguish between these mechanisms, we focus on transactions in which each channel is most likely to be relevant. The results point to in-group favoritism rather than trust as the primary driver of matching discounts. In particular, discounts are largest for first-generation migrant sellers, for sellers who have realized larger capital gains on their property, and for sellers from countries with stronger kin-based institutions.

Our findings add a new dimension to the literature on race and ethnicity in housing markets. Much of the existing work has focused on the supply side, examining whether minority buyers pay price premiums due to discrimination by sellers or brokers (Chambers, 1992; Kiel and Zabel, 1996; Ondrich et al., 2003; Myers, 2004; Ihlanfeldt and Mayock, 2009; Bayer et al., 2017; Christensen and Timmins, 2022; Box-Couillard and Christensen, 2024). On the demand side, researchers have studied how residential location choices are shaped by racial preferences, which can contribute to segregation. A

widely documented phenomenon is *white flight*, in which members of the majority group leave neighborhoods following an influx of minority buyers (Card et al., 2008; Boustan, 2010). Some studies also show that minority households may prefer to self-select into segregated neighborhoods (Waldfogel, 2008; Aliprantis et al., 2024).

Most of this literature focuses on the United States, with its distinct history of racial discrimination. One exception is Wong (2013), who uses data from Singapore to show that preferences for ethnic neighborhood compositions follow an inverted U-shape. One of the few studies that considers both buyer and seller ethnicity is Agarwal et al. (2019), who find that specialized brokers from the seller's own ethnic group facilitate same-ethnicity transactions, sometimes at the cost of lower sale prices for the seller. We extend this literature by studying ethnic matching between homebuyers and sellers in the Netherlands, a market that features a large number of migrant groups with very different socio-economic backgrounds. Enabled by comprehensive administrative data on buyers, sellers, and transacted properties, we investigate ethnic matching in housing transactions as a broad-based phenomenon.

We also complement research on in-group bias in economic interactions. Following the introduction of *social identity theory* by Tajfel and Turner (1979), psychologists have long studied the importance individuals attach to belonging to a social group. In economics, group identity was first formalized by Akerlof and Kranton (2000), and since then a growing body of theoretical and empirical work has examined how group membership shapes economic behavior. One strand specifically investigates preferential treatment of in-group members (Ockenfels and Werner, 2014), often associated with shared race or ethnicity (Glaeser et al., 2000; Fong and Luttmer, 2009; Mantilla et al., 2021; Kudashvili and Lergetporer, 2022; Cetre et al., 2024), although this relationship is complex and highly context-dependent.[2]

Most evidence comes from experimental studies (see Lane (2016) for a meta-analysis), while few papers examine ethnic in-group bias in real economic transactions. Exceptions include Fisman et al. (2017) and Chen et al. (2019), who document in-group favoritism in lending markets. We extend this literature by analyzing preferences for ethnic matching and their financial implications in housing transactions—which involve the largest financial decision most individuals make in their lifetime.

2. Data and Institutional Background

Homeownership rates in the Netherlands are around 60%, comparable to other western European countries. However, due to rising house prices following the Global Financial Crisis, access to homeownership has become increasingly difficult, especially in urban areas. One distinctive feature of the Dutch market is its very well-developed mortgage market. In theory, lending standards in this market are relatively generous, allowing for broad access. For instance, the stipulated upper limit on loan-to-value (LTV) ratios

[2] For example, Fershtman and Gneezy (2001) find that in a trust game in Israel, players of Eastern origin are discriminated against, even by members of their own ethnic group, due to ethnic stereotypes.

is 100%, and loans without down payment are commonly made in practice.[3] At the same time, relatively tight loan-to-income (LTI) limits make it difficult, particularly for young, low- to middle-income households, to access homeownership in their preferred locations. Moreover, lenders typically apply strict income verification requirements and require income stability, which poses a barrier to entry for self-employed individuals and those on temporary contracts.

2.1. Migrants in the Dutch Housing Market

The Netherlands is home to a large and diverse set of ethnic groups. In 2025, 16.8% and 11.8% of the population were first- and second-generation migrants, respectively (CBS, 2026). Broadly, migrants can be categorized into four groups. First, migrants from former Dutch colonies, including Indonesia, Suriname, and the former Netherlands Antilles in the Caribbean. Second, former guest workers and their descendants, particularly from Turkey and Morocco; these two groups are predominantly second-generation migrants and Dutch citizens. Third, cross-border migrants from Germany or Belgium. Fourth, highly-skilled expats, often from China, India, or other European countries, who are typically first-generation migrants without Dutch citizenship.

Historically, ethnic minorities have been under-represented among homeowners, relative to their population share, even after accounting for socio-economic characteristics (Zorlu et al., 2014). One potential explanation is that migrant buyers face additional barriers in the mortgage market compared with indigenous Dutch households (Aalbers, 2007). However, in line with positive net migration to the Netherlands for more than a decade (CBS, 2025), the share of migrants among homebuyers has risen from 16% in 2012 to 25% in 2024, driven largely by first-generation migrants. This pattern is visualized in Figure 1.

2.2. Data

To study ethnic interactions in housing transactions, we combine data from two sources. Transaction records come from the Dutch Land Registry (Kadaster), which covers the universe of sales of existing properties. These records include the timing and sale price of each transaction, but they do not identify buyers and sellers, information that is essential for our analysis. To address this, we use microdata from Statistics Netherlands (CBS), which provides extensive administrative records at both the property and individual level. Property ownership records document the first owner of each residential unit for all years from 2011 to 2025. Using changes in these ownership records, we identify buyers and sellers for most transactions between 2012 and 2024. In total, buyers and sellers can be identified for more than 87% of transactions. Transactions that are dropped include units with no recorded owner or cases where ownership changes are ambiguous, for example when they are recorded multiple years after the transaction date.

[3] In the past, LTV limits exceeding 100% were common. After 2012, as a measure to reduce household debt, LTV limits were subsequently lowered from 106% to 100%.

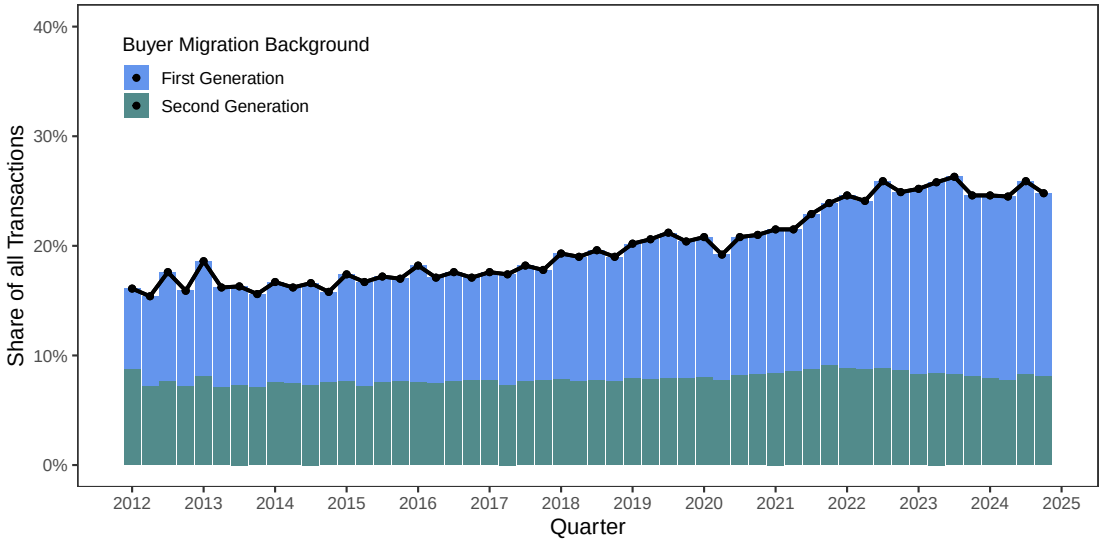


Figure 1: Share of Homebuyers with Migration Background

Notes: This figure shows the share of homebuyers with migration background in each quarter between 2012 and 2024. The solid line groups all buyers with migration background, while blue and green bars distinguish between first- and second-generation migrants.

The richness of the CBS data allows us to infer a wide range of additional information by merging other datasets using unique identifiers for properties or for buyers and sellers. We determine each buyer's and seller's migration background using the CBS variable *origin country*. According to this variable, individuals are classified as Dutch only if they and both of their parents were born in the Netherlands. Otherwise, their origin is defined by the country in which they or one of their parents were born. If both parents were born in different countries, origin is determined by the mother's birth country. We define as migrant buyers or sellers all those with a non-Dutch origin according to this variable. This classification is independent of legal status and may differ from a person's nationality. Indeed, many individuals classified as migrants are Dutch citizens. The variable is therefore a proxy for ethnicity, which we use interchangeably with migration background in this paper.[4] Ethnicity is arguably more salient than nationality in capturing latent factors that may influence transaction outcomes, such as homophily or discrimination.

We add data on individual-level disposable income and household-level wealth for both buyers and sellers, measured in the transaction year. The wealth data is particularly detailed, as it decomposes the household's portfolio into different asset types and reports current debt levels. Using residential location data from the year prior to the transaction, we identify local buyers who make a purchase in the neighborhood that they

[4]We acknowledge that ethnicity and migration background are not synonymous. For example, an African American migrant and a White American migrant would both be classified as belonging to the same group in our analysis, despite clear ethnic differences.

currently reside in. In addition, we use family network information, which identifies all family members and spouses across the Dutch population. This allows us to flag non-arm's-length "intra-family transactions," involving buyers and sellers who are related or are partners. At the property level, we include the property's tax value, measured on January 1 in the year prior to the transaction year.

Finally, we use an alternative transaction-level dataset from the largest Dutch association of real estate agents (NVM). Approximately 50% of the transactions in the main data involve a NVM-affiliated listing agent. By merging NVM records with the full Kadaster data, we identify whether a transaction was brokered. This classification is imperfect, however, as it misses transactions handled by non-NVM agents, and therefore includes false negatives.

The data are summarized in Table 1, where we distinguish between different types of buyer-seller interactions. Panel A reports transactions involving indigenous Dutch buyers, and Panel B focuses on migrant buyers. We further distinguish between "matched" and "unmatched" transactions, depending on whether buyer and seller share the same ethnicity. Among Dutch buyers, those purchasing from non-Dutch sellers have slightly higher income and asset holdings, on average, and tend to buy homes of somewhat higher value. Overall, migrant buyers are substantially less wealthy than Dutch buyers, though this may partly reflect measurement error if migrants hold assets abroad. Within the group of migrant buyers, there are large differences between transactions involving same-ethnicity or other-ethnicity sellers. Buyers purchasing from same-ethnicity sellers have lower income and liquid assets but more real estate. This may largely reflect the higher share of second-generation migrants among buyers in matched transactions. Transactions between migrants with shared ethnicity involve properties of much lower value and are significantly more likely to be unbrokered.

3. Ethnic Matching in Housing Transactions

The location choices of migrant homebuyers in the Netherlands are highly clustered. For example, although ethnic Turkish buyers account for less than 1.9% of all homebuyers nationwide, they make up 6.3% of buyers in The Hague and 48.1% in one neighborhood within the city. Previous research has typically analyzed the segregated home purchase patterns of minority buyers in terms of preferences or barriers to neighborhood access. In contrast, we are interested in preferences for ethnic matching—the tendency of buyers and sellers from the same group to transact with one another—independent of location. Disentangling these two phenomena is empirically challenging. If members of a given group share common preferences for neighborhoods, either due to ethnic homophily or due to shared amenity preferences, the share of "matched" transactions will mechanically be higher.

This pattern is illustrated in the cross-tabulation of buyer and seller ethnicity shown in Figure 2. The first number in each cell reports the number of transactions between buyers and sellers of each group. Same-ethnicity transactions, shown along the main diagonal, consistently occur more frequently than predicted by the group's overall market

Table 1: Summary Statistics

	Other-Ethnicity Seller			Same Ethnicity Seller		
	Mean	Median	SD	Mean	Median	SD
Panel A: Dutch Buyers						
Income (€1,000)	50.89	37.67	47.50	46.33	35.72	40.99
Household Net Wealth (€1,000)	402.64	122.01	878.01	356.92	126.26	769.69
Household Liquid Assets (€1,000)	95.677	33.77	182.24	87.15	33.47	162.68
Household Real Estate (€1,000)	329.30	231.43	423.01	295.30	229.13	353.16
Sale Price (€1,000)	334.83	276.00	232.73	323.04	275.00	197.38
Share Brokered (%)		55.35			55.85	
Transactions		*190,622*			*1,481,981*	
Panel B: Migrant Buyers						
Income (€1,000)	48.63	37.69	43.76	42.42	32.92	39.35
Household Net Wealth (€1,000)	211.71	41.54	617.55	231.33	45.85	642.26
Household Liquid Assets (€1,000)	64.17	21.58	142.24	55.25	16.45	130.93
Household Real Estate (€1,000)	218.83	0	366.94	255.89	146.30	408.76
Sale Price (€1,000)	345.97	295.00	224.42	279.40	237.50	186.34
Share First Generation (%)		61.52			53.79	
Share Brokered (%)		56.75			27.44	
Transactions		*407,865*			*20,288*	

Notes: This table summarises observable characteristics for transactions involving different types of buyer-seller interaction. Panel A summarises all transactions featuring indigenous Dutch buyers, Panel B summarises those involving buyers with migration background. Within each group, a distinction is made, depending on whether the seller shares the buyers ethnic background or not.

share. This does not necessarily imply that buyers actively seek sellers from the same ethnic group. To separate ethnic matching preferences from location choice, we therefore analyze matching patterns at the sub-neighborhood level. Dutch neighborhoods are the smallest official geographic units defined by Statistics Netherlands, with an average population of around 1,500, roughly comparable to U.S. census blocks. Within these small areas, variation in ethnic composition or amenities is limited, allowing us to more precisely isolate preferences for same-ethnicity transactions.

3.1. Migrants Have Preferences for Ethnic Matching

To study matching rates within neighborhoods, we follow the methodology of Badarinza et al. (2022), which is based on a simple premise. If buyer-seller matching were random

Table 2: Cross-Tabulation of Buyer and Seller Migration Background

Buyer \ Seller	Belgium	China	Dutch Caribbean	Germany	Great Britain	India	Indonesia	Morocco	Netherlands	Poland	Suriname	Turkey
Belgium	**N = 1519** **a = €237k** **$\tilde{p}$ = 0.111**	N = 35 a = €320k $\tilde{p}$ = 0.123	N = 73 a = €316k $\tilde{p}$ = 0.129	N = 392 a = €319k $\tilde{p}$ = 0.109	N = 136 a = €428k $\tilde{p}$ = 0.127	N = 17 a = €311k $\tilde{p}$ = 0.133	N = 396 a = €366k $\tilde{p}$ = 0.126	N = 48 a = €258k $\tilde{p}$ = 0.162	N = 13922 a = €308k $\tilde{p}$ = 0.121	N = 62 a = €262k $\tilde{p}$ = 0.118	N = 139 a = €297k $\tilde{p}$ = 0.149	N = 117 a = €224k $\tilde{p}$ = 0.125
China	N = 111 a = €336k $\tilde{p}$ = 0.124	**N = 681** **a = €266k** **$\tilde{p}$ = 0.082**	N = 123 a = €258k $\tilde{p}$ = 0.129	N = 274 a = €301k $\tilde{p}$ = 0.099	N = 148 a = €347k $\tilde{p}$ = 0.124	N = 62 a = €344k $\tilde{p}$ = 0.154	N = 535 a = €323k $\tilde{p}$ = 0.140	N = 210 a = €250k $\tilde{p}$ = 0.151	N = 11430 a = €303k $\tilde{p}$ = 0.141	N = 144 a = €249k $\tilde{p}$ = 0.207	N = 758 a = €262k $\tilde{p}$ = 0.148	N = 534 a = €244k $\tilde{p}$ = 0.158
Dutch Caribbean	N = 58 a = €290k $\tilde{p}$ = 0.144	N = 27 a = €334k $\tilde{p}$ = 0.124	**N = 198** **a = €262k** **$\tilde{p}$ = 0.082**	N = 171 a = €301k $\tilde{p}$ = 0.108	N = 52 a = €351k $\tilde{p}$ = 0.117	N = 13 a = €329k $\tilde{p}$ = 0.188	N = 309 a = €355k $\tilde{p}$ = 0.115	N = 63 a = €270k $\tilde{p}$ = 0.195	N = 7905 a = €313k $\tilde{p}$ = 0.124	N = 56 a = €270k $\tilde{p}$ = 0.160	N = 279 a = €281k $\tilde{p}$ = 0.103	N = 141 a = €241k $\tilde{p}$ = 0.166
Germany	N = 285 a = €336k $\tilde{p}$ = 0.103	N = 60 a = €313k $\tilde{p}$ = 0.144	N = 113 a = €323k $\tilde{p}$ = 0.128	**N = 1536** **a = €282k** **$\tilde{p}$ = 0.063**	N = 236 a = €440k $\tilde{p}$ = 0.130	N = 31 a = €338k $\tilde{p}$ = 0.132	N = 882 a = €368k $\tilde{p}$ = 0.119	N = 105 a = €274k $\tilde{p}$ = 0.131	N = 26957 a = €320k $\tilde{p}$ = 0.122	N = 111 a = €309k $\tilde{p}$ = 0.131	N = 308 a = €296k $\tilde{p}$ = 0.133	N = 292 a = €266k $\tilde{p}$ = 0.123
Great Britain	N = 131 a = €384k $\tilde{p}$ = 0.105	N = 46 a = €411k $\tilde{p}$ = 0.188	N = 75 a = €348k $\tilde{p}$ = 0.148	N = 377 a = €411k $\tilde{p}$ = 0.117	**N = 412** **a = €441k** **$\tilde{p}$ = 0.100**	N = 31 a = €598k $\tilde{p}$ = 0.082	N = 529 a = €436k $\tilde{p}$ = 0.139	N = 73 a = €326k $\tilde{p}$ = 0.199	N = 12346 a = €384k $\tilde{p}$ = 0.135	N = 70 a = €366k $\tilde{p}$ = 0.169	N = 247 a = €340k $\tilde{p}$ = 0.146	N = 129 a = €323k $\tilde{p}$ = 0.140
India	N = 104 a = €360k $\tilde{p}$ = 0.169	N = 209 a = €385k $\tilde{p}$ = 0.144	N = 147 a = €348k $\tilde{p}$ = 0.168	N = 265 a = €387k $\tilde{p}$ = 0.156	N = 191 a = €449k $\tilde{p}$ = 0.129	**N = 544** **a = €373k** **$\tilde{p}$ = 0.141**	N = 577 a = €388k $\tilde{p}$ = 0.163	N = 214 a = €350k $\tilde{p}$ = 0.206	N = 11254 a = €375k $\tilde{p}$ = 0.169	N = 176 a = €345k $\tilde{p}$ = 0.202	N = 820 a = €350k $\tilde{p}$ = 0.164	N = 499 a = €356k $\tilde{p}$ = 0.178
Indonesia	N = 329 a = €354k $\tilde{p}$ = 0.097	N = 99 a = €296k $\tilde{p}$ = 0.121	N = 195 a = €321k $\tilde{p}$ = 0.126	N = 974 a = €343k $\tilde{p}$ = 0.097	N = 364 a = €433k $\tilde{p}$ = 0.103	N = 41 a = €334k $\tilde{p}$ = 0.132	**N = 2143** **a = €366k** **$\tilde{p}$ = 0.090**	N = 170 a = €285k $\tilde{p}$ = 0.129	N = 36363 a = €345k $\tilde{p}$ = 0.118	N = 154 a = €293k $\tilde{p}$ = 0.154	N = 593 a = €290k $\tilde{p}$ = 0.124	N = 348 a = €266k $\tilde{p}$ = 0.121
Morocco	N = 67 a = €337k $\tilde{p}$ = 0.058	N = 32 a = €293k $\tilde{p}$ = 0.103	N = 72 a = €246k $\tilde{p}$ = 0.122	N = 187 a = €284k $\tilde{p}$ = 0.077	N = 64 a = €360k $\tilde{p}$ = 0.086	N = 11 a = €437k $\tilde{p}$ = 0.127	N = 257 a = €328k $\tilde{p}$ = 0.079	**N = 371** **a = €263k** **$\tilde{p}$ = 0.055**	N = 6069 a = €300k $\tilde{p}$ = 0.095	N = 67 a = €261k $\tilde{p}$ = 0.155	N = 335 a = €274k $\tilde{p}$ = 0.100	N = 322 a = €258k $\tilde{p}$ = 0.089
Netherlands	N = 11756 a = €315k $\tilde{p}$ = 0.100	N = 2556 a = €312k $\tilde{p}$ = 0.113	N = 5208 a = €296k $\tilde{p}$ = 0.122	N = 35049 a = €309k $\tilde{p}$ = 0.086	N = 8559 a = €380k $\tilde{p}$ = 0.110	N = 997 a = €355k $\tilde{p}$ = 0.126	N = 40020 a = €345k $\tilde{p}$ = 0.111	N = 4205 a = €272k $\tilde{p}$ = 0.132	**N = 1481981** **a = €309k** **$\tilde{p}$ = 0.108**	N = 5009 a = €272k $\tilde{p}$ = 0.145	N = 13397 a = €283k $\tilde{p}$ = 0.116	N = 10151 a = €262k $\tilde{p}$ = 0.121
Poland	N = 220 a = €237k $\tilde{p}$ = 0.116	N = 68 a = €249k $\tilde{p}$ = 0.126	N = 178 a = €218k $\tilde{p}$ = 0.111	N = 505 a = €239k $\tilde{p}$ = 0.098	N = 139 a = €267k $\tilde{p}$ = 0.118	N = 32 a = €281k $\tilde{p}$ = 0.140	N = 564 a = €249k $\tilde{p}$ = 0.113	N = 200 a = €208k $\tilde{p}$ = 0.130	N = 18333 a = €236k $\tilde{p}$ = 0.117	**N = 1192** **a = €221k** **$\tilde{p}$ = 0.159**	N = 561 a = €208k $\tilde{p}$ = 0.108	N = 601 a = €196k $\tilde{p}$ = 0.132
Suriname	N = 135 a = €300k $\tilde{p}$ = 0.117	N = 157 a = €274k $\tilde{p}$ = 0.147	N = 297 a = €258k $\tilde{p}$ = 0.098	N = 449 a = €281k $\tilde{p}$ = 0.100	N = 184 a = €319k $\tilde{p}$ = 0.119	N = 111 a = €303k $\tilde{p}$ = 0.139	N = 850 a = €309k $\tilde{p}$ = 0.118	N = 323 a = €258k $\tilde{p}$ = 0.154	N = 18970 a = €297k $\tilde{p}$ = 0.125	N = 205 a = €226k $\tilde{p}$ = 0.174	**N = 3400** **a = €245k** **$\tilde{p}$ = 0.068**	N = 746 a = €240k $\tilde{p}$ = 0.148
Turkey	N = 238 a = €299k $\tilde{p}$ = 0.099	N = 226 a = €315k $\tilde{p}$ = 0.127	N = 283 a = €286k $\tilde{p}$ = 0.122	N = 698 a = €288k $\tilde{p}$ = 0.096	N = 262 a = €372k $\tilde{p}$ = 0.120	N = 135 a = €384k $\tilde{p}$ = 0.118	N = 1083 a = €320k $\tilde{p}$ = 0.103	N = 714 a = €265k $\tilde{p}$ = 0.116	N = 25761 a = €304k $\tilde{p}$ = 0.118	N = 345 a = €248k $\tilde{p}$ = 0.164	N = 1711 a = €276k $\tilde{p}$ = 0.109	**N = 5641** **a = €239k** **$\tilde{p}$ = 0.102**

Notes: This table breaks down patterns of ethnic buyer-seller interaction in the Dutch housing market. Rows indicate the migration background of buyers, columns that of sellers. Each cell reports, for each type of buyer-seller interaction, the number of transactions (N), average tax values per January 1 of year t-1 (a) and average log point differences between sale prices and tax values. Diagonal entries (co-ethnic buyer and seller) are highlighted in bold.

with respect to ethnicity, the share of sellers from country j among transactions involving buyers from the same country j would, in expectation, equal the share of sellers from country j across all transactions in that neighborhood. Deviations from this benchmark indicate preferences for (or against) ethnic matching. More formally, let $N_{ij,l}$ denote the number of transactions involving buyers from country i and sellers from country j in neighborhood l. The share of transactions involving sellers from country j among all transactions in a given neighborhood is then:

$$m_{j,l} = \frac{\sum_{i=1}^{I} N_{ij,l}}{\sum_{j=1}^{J} \sum_{i=1}^{I} N_{ij,l}}. \tag{1}$$

In contrast, the fraction of sellers from country j, only among transactions involving a buyer from country i is:

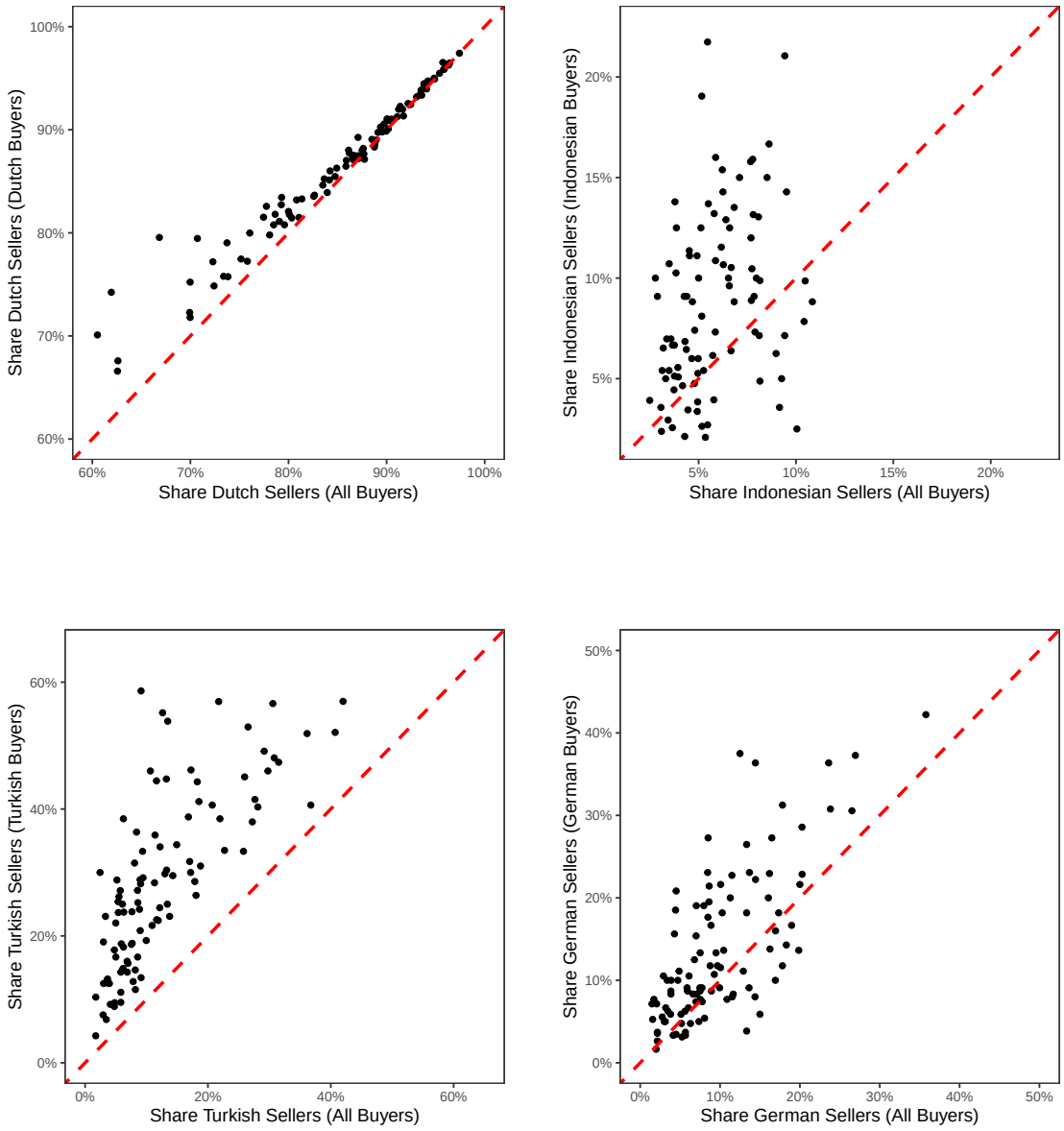
$$h_{ij,l} = \frac{N_{ij,l}}{\sum_{j=1}^{J} N_{ij,l}}. \tag{2}$$

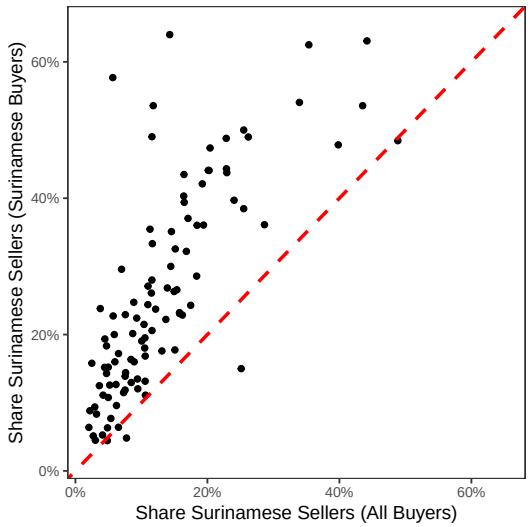
In the absence of preferential matching, it should hold that $m_{j,l}$ is equal to $h_{ij,l}$ for $i = j$. For instance, if 17% of all sellers in a neighborhood are Turkish, the share of Turkish sellers among Turkish buyers alone should also be equal to 17%, if search is random and the sample is sufficiently large.

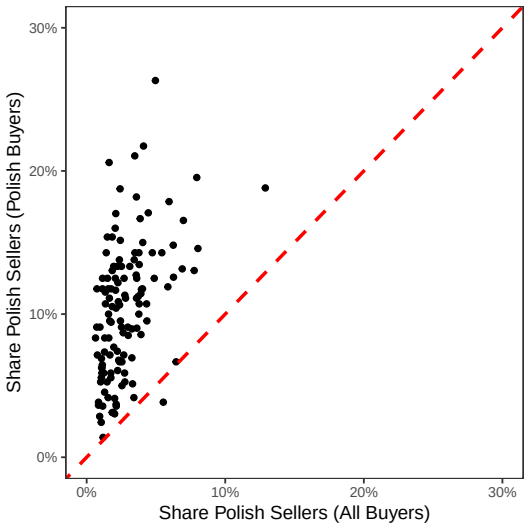
In Figure 2, we plot $m_{j,l}$ against $h_{ij,l}$ for the largest migrant groups in the Dutch housing market, and compare these patterns to indigenous Dutch. For each group, we visualize the 100 neighborhoods most prominent among its buyers. The results show that preferences for ethnic matching exist in all groups, but to very different degrees. Among buyers from Indonesia, Germany, or Belgium, ethnic matching is relatively limited: $h_{ij,l}$ exceeds $m_{j,l}$ in most neighborhoods, but deviations from the neutral benchmark are generally small. In contrast, for buyers with Chinese, Indian, Moroccan, Polish, Surinamese, or Turkish backgrounds, $h_{ij,l}$ exceeds $m_{j,l}$ in nearly all neighborhoods, often by a substantial margin. In other words, for most ethnic groups in our analysis, transactions between buyers and sellers of the same ethnicity occur far more frequently than standard search theory would predict, even when focusing on highly granular sub-markets.

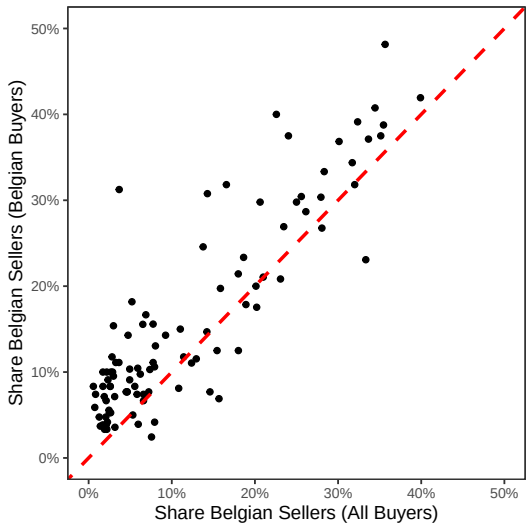
3.2. Preferences for Ethnic Matching are Strongest in Small Groups

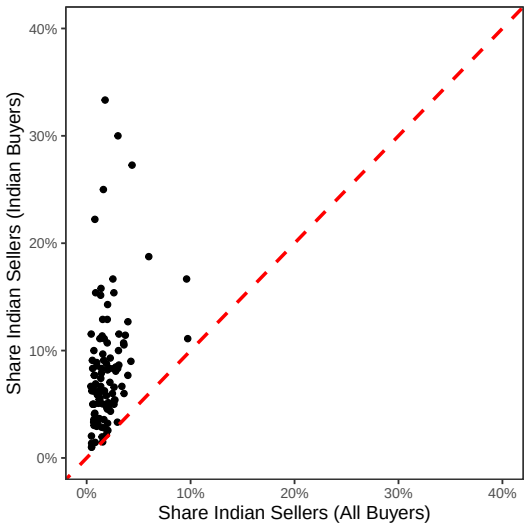
The plots in Figure 2 suggest that ethnic matching is widespread: most migrant groups exhibit at least some preference for same-ethnicity transactions. However, the strength of this preference appears inversely related to group size in the Dutch housing market. Among Indonesian migrants, the largest group of buyers with migration background (2.1% of all purchases), matching preferences are relatively weak. By contrast, Moroccan migrants, who account for only 0.4% of purchases, show much stronger preferences for same-ethnicity transactions.


Share Dutch Sellers (Dutch Buyers)
Share Dutch Sellers (All Buyers)
100%
90%
80%
70%
60%
60%
70%
80%
90%
100%
Share Indonesian Sellers (Indonesian Buyers)
Share Indonesian Sellers (All Buyers)
20%
15%
10%
5%
5%
10%
15%
20%
Share Turkish Sellers (Turkish Buyers)
Share Turkish Sellers (All Buyers)
60%
40%
20%
0%
0%
20%
40%
60%
Share German Sellers (German Buyers)
Share German Sellers (All Buyers)
50%
40%
30%
20%
10%
0%
0%
10%
20%
30%
40%
50%


Share Surinamese Sellers (Surinamese Buyers)
Share Surinamese Sellers (All Buyers)
0%
20%
40%
60%


Share Polish Sellers (Polish Buyers)
Share Polish Sellers (All Buyers)
0%
10%
20%
30%


Share Belgian Sellers (Belgian Buyers)
Share Belgian Sellers (All Buyers)
0%
10%
20%
30%
40%
50%


Share Indian Sellers (Indian Buyers)
Share Indian Sellers (All Buyers)
0%
10%
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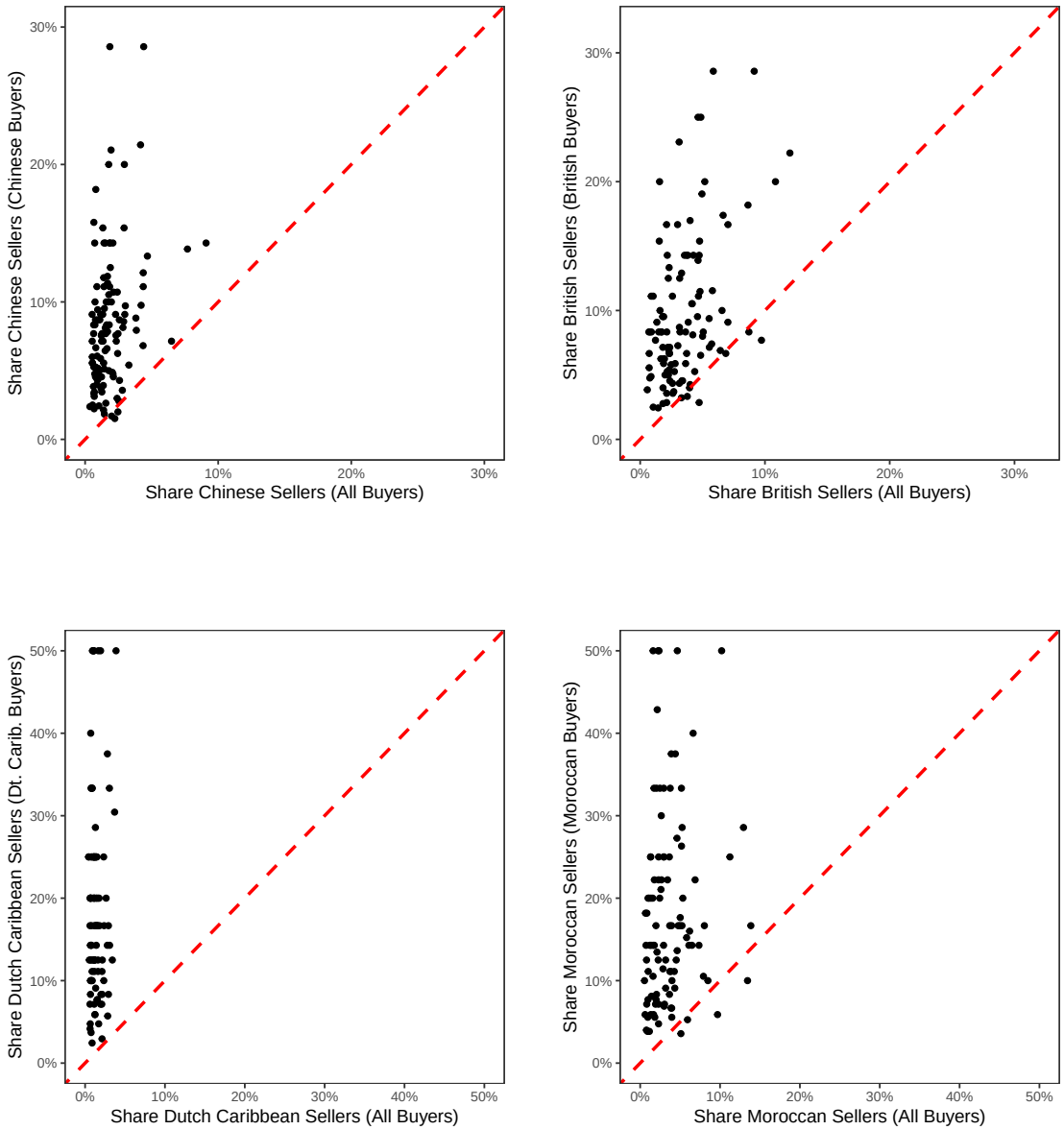


Figure 2: Matching Preferences By Ethnic Group

Notes: This figure visualizes preferences for ethnic matching across the largest migrant groups in the Dutch housing market. For each group, we select the 100 neighborhoods in which most purchases by group-members are made. Each dot represents a neighborhood. For each neighborhood, we compare the share of sellers from a given group (x-axis) to the share of sellers from that group, only among transactions involving buyers from the same group. Details are found in the main text.

To investigate whether these patterns hold systematically, we extend the analysis to the 25 largest ethnic groups in the Dutch housing market. Rather than focusing on individual neighborhoods, we now aggregate transaction patterns across all neighborhoods. For each group, we first compute $h_{ij,l}/m_{j,l} - 1$ in each neighborhood, which measures preferential matching based on ethnicity (Badarinza et al., 2022). We then calculate the weighted median of this measure across all neighborhoods. A value greater than zero indicates evidence of preferential matching based on ethnicity.

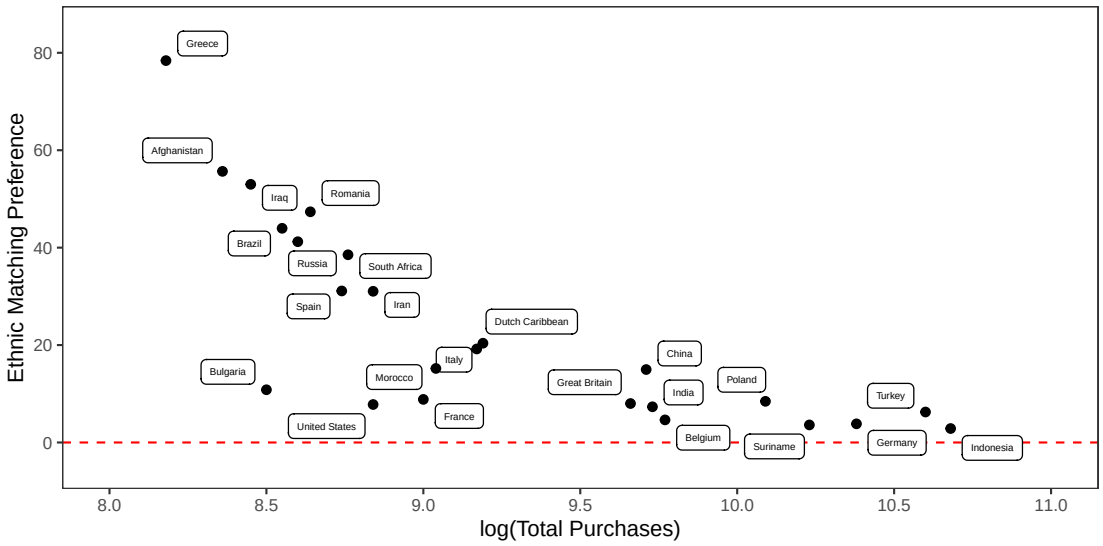
In Figure 3, aggregated matching preferences are plotted against the total number of purchases by buyers from each migration background. Panel (a) is based on the full transaction sample. Two main patterns emerge. First, all migrant groups exhibit some preference for ethnic matching. In contrast, indigenous Dutch buyers and sellers, which are excluded from the figure to preserve scaling, have a median value of $h_{ij,l}/m_{j,l} - 1$ equal to zero. Second, matching preferences are inversely related to group size: the largest migrant groups show only small deviations from random search, whereas smaller groups display increasingly non-random matching patterns.

One concern is that same-ethnicity transactions in small groups may reflect non-arm's-length sales, such as transactions between family members. Because we aim to isolate preferences for matching based solely on migration background, it is important to account for this confounding factor. In Panel (b), we therefore recalculate matching preferences after excluding all intra-family sales. This adjustment has little impact on the largest migrant groups but reduces the estimated preferences for smaller groups. Taken together, this suggests that non-arm's-length transactions are an important confounder, but leave the qualitative relationship between group size and ethnic matching preferences unchanged.

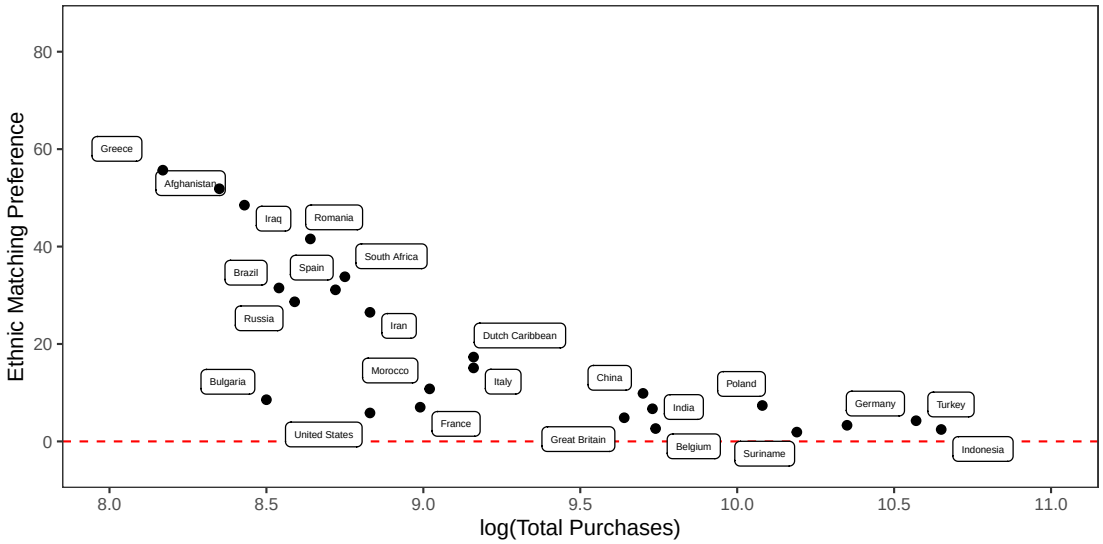
4. Price Differentials in Within-Ethnicity Transactions

We now turn to the question of whether within-group transactions among migrants entail a price differential, relative to other types of buyer-seller matches. Theoretically, the direction of such differentials is ambiguous. On the one hand, two channels suggest that migrant buyers may pay a premium to purchase from sellers of the same group. First, migrant buyers may face discriminatory constraints in their housing search, with the effect of steering them towards "ethnic neighborhoods", where same-ethnicity sellers are overrepresented. By concentrating the demand of migrant buyers to these neighborhoods, they may be forced to pay higher prices, relative to other buyers who do not have a constrained choice set. Evidence for discriminatory steering by real estate agents is well-established, particularly in the U.S. context (e.g., Christensen and Timmins, 2022). Second, migrant buyers may exhibit homophily and therefore be willing to pay a premium for residing in close proximity to their co-ethnics (Aliprantis et al., 2024). Relatedly, migrants from the same group may share preferences for certain neighborhood amenities that other buyers do not value (Waldfogel, 2008).

On the other hand, within-ethnicity transactions may involve discounts if migrant sellers are willing to forgo some financial return in order to transact with buyers from



(a) Full Sample



(b) Excluding Intra-Family Transactions

Figure 3: Preferences for Ethnic Matching Across Groups

Notes: This figure visualized preferences for ethnic matching across the largest migrant groups in the Dutch housing market. For each group, the (weighted) median matching preference ($h_{ij,l}/m_{j,l} - 1$) is calculated across all neighborhoods, and plotted against the total number of purchases made by buyers from that group. The red dashed line indicates the non-preferential benchmark. In panel (a), all transactions are included, whereas panel (b) excludes intra-family transactions. In both panels, indigenous Dutch buyers are excluded to avoid scaling issues on the x-axis. In either case, the median ethnic matching preference among indigenous Dutch buyers is equal to 0.

their own group. Such discounts may arise from different underlying motivations. For instance, migrant sellers may have increased trust towards their co-ethnics and trade off a lower sale price in exchange for a higher (perceived) likelihood of successfully carrying out the transaction. The fact that trust levels are higher between people of shared ethnicity has been shown in survey data (Guiso et al., 2009). Alternatively, in-group favoritism may lead sellers to be altruistic toward their co-ethnics. In that case, sellers may be willing to forgo some financial surplus when negotiations with a group member, a behavior that has been shown in various economic interactions in experimental settings (Chen and Li, 2009).

4.1. Same-Ethnicity Transactions Involve Comparable Properties

In the canonical hedonic framework, pioneered by Rosen (1974), a home is viewed as a composite good, made up of all its structural and neighborhood attributes. Each attribute's shadow price is determined in a competitive market. The price of a complete home is then the linear combination of all its attributes, weighted by their respective shadow prices. In this model, buyers and sellers take the value for each attribute as given, such that there is no role for bargaining to influence transaction prices. However, Harding et al. (2003) show that if markets for individual home characteristics are thin, shadow price are not well-defined, such that the interaction between buyers and sellers can influence final transaction outcomes. This insight is crucial to explain why different types of buyers end up paying differential prices for observationally equivalent homes. For instance, Bayer et al. (2017) find that African American and Hispanic homebuyers pay a price premium of around 2% and Goldsmith-Pinkham and Shue (2023) find a similar premium for female buyers. Bernstein et al. (2019) study the price effect of climate risk and discover that more sophisticated buyers apply a larger discount to properties exposed to sea level rise.

Our empirical analysis investigates whether same-ethnicity transactions among migrants involve price discounts. To test this, assume that the transaction price of a home is a function of its attributes, both observable (λ) and unobservable (ψ), of characteristics of the buyer (B) and the seller (S), and an indicator for "matched" transactions (M), involving buyers and sellers of the same ethnicity:

$$p = p(\lambda, \psi, B, S, M) \tag{3}$$

We are interested in the causal effect of M on prices. However, a reduced-form estimation of this relationship suffers from an obvious endogeneity problem: homes sold in same-ethnicity transactions are different from others in ways that are at least partially unobservable to the researcher. For instance, matched transactions occur more frequently in ethnic (sub-)neighborhoods, which may offer a distinct set of amenities that is absent in predominantly Dutch neighborhoods. A threat to identification therefore arises because of a correlation between the matching dummy and unobserved property or neighborhood characteristics: $Cov(M, \psi) \neq 0$.

The identifying assumption we will make in order to recover the causal effect of ethnic matching on transaction prices is that same-ethnicity transactions do not differ from others transactions, after controlling for buyer and seller characteristics: $\psi \perp\!\!\!\perp M \mid (B, S)$. While this assumption cannot be tested directly, we evaluate its credibility by examining a related question—whether matched transactions are systematically different from others in *observed* characteristics. Our data allows for a compelling way to test this, by studying tax values of transacted homes. In the Netherlands, each residential property is assessed on an annual basis, with the objective of estimating its market value per January 1 of the previous year. Assessments are administered by municipalities and based on automated valuation models, comparing a property to others, which sold recently in the same neighborhood, and adjusting for observable characteristics. In some cases, tax value estimations are verified by human assessors. The natural logarithm of the most recent tax value for transaction i, which we denote by a_i, should therefore be a reasonable proxy for observable quality, mapping all property and neighborhood attributes into a single value. Tax values are generally considered to be good proxies for market values (Ahlfeldt et al., 2025) and in the Dutch context, they can explain over 90% of the observable variation in sales prices (Francke et al., 2024). [5] In Table 2, we show that across the country, average tax values vary substantially for various types of buyer-seller interaction.

To test for systematic differences in tax values depending on the ethnic interaction between buyers and sellers, we estimate the following model:

$$a_i = \mu_{b(i)} + \gamma_{s(i)} + \delta_{c(i)} + \beta\, migrant_i + \theta\, match_i + \psi\,(migrant_i \times match_i) + \varepsilon_i, \qquad (4)$$

where $migrant_i$ indicates a buyer with migration background and $match_i$ indicates transactions involving same-ethnicity buyers and sellers. We include neighborhood-by-year-quarter-cell fixed effects, denoted by $\delta_{c(i)}$, to account for differences in tax values due to location choice and timing. In addition, we control for an increasingly restrictive set of fixed effects at the buyer and seller level, denoted by $\mu_{b(i)}$ and $\gamma_{s(i)}$, respectively. In the most restrictive specification, we further include property-level fixed effects, effectively estimating a repeat-sales model. While this reduces the sample to properties that transact multiple times, it allows us to control for all time-invariant unobserved characteristics at the property level.

Because both independent variables are binary, the model is fully interacted. Transactions between indigenous Dutch buyers and migrant sellers ($migrant_i = 0$ and $match_i = 0$) form the omitted baseline group. All coefficients are therefore interpreted relative to the average (log) tax value of these transactions within a given fixed-effect cell. This specification allows us to cleanly isolate ethnically matched transactions among migrants from all other types of buyer-seller interactions, including matches between Dutch buyers and sellers, which account for 71% of all transactions in the data.

[5] Given that tax values are based on comparable sales, they should even capture unobserved neighborhood characteristics to some extent. However, given that they do not involve human inspection in most cases, it is plausible that they overlook some hard-to-observe property characteristics.

The estimated results are reported in Table 3. The baseline model, reported in column (1), suggests that within a neighborhood-by-year-quarter cell, transactions between same-ethnicity migrants involve properties of 2.4% lower tax value, compared to transactions between migrant buyers and other-ethnicity sellers (including Dutch sellers). In comparison to Dutch-to-Dutch transactions, same-ethnicity transactions among migrants involve properties of 1.9% lower value ($0.005 - 0.024$). Including additional fixed effects reduces this difference. In column (3), we include fixed effects for the deciles of buyer income, seller income, buyer financial assets and seller financial assets. In addition, we include fixed effects for the buyer's and seller's ethnic group, thereby isolating the role of their interaction. This reduces the difference in tax values between same-ethnicity and other-ethnicity transactions among migrant buyers to 1.6%. Importantly, once property fixed effects are included (column (4)), all differences by buyer and seller ethnicity disappear. Similarly, we find no differences in tax values when restricting the sample to transactions involving only migrant buyers and sellers. Taken together, these findings suggest that, while same-ethnicity transactions between migrants of the same group do involve properties of slightly lower value, compared to other buyer-seller combinations, these differences can entirely be explained by time-invariant property or location characteristics. In other words, differences in observable property values in same-ethnicity transactions are small and can fully be accounted for. Under the identifying assumption, this suggests that any remaining unobserved differences in property quality are unlikely to bias our estimates.

4.2. Same-Ethnicity Transactions Entail a Price Discount

We now return to the question of whether there is a price differential in matched transactions. To answer this, we adapt the model in (4) slightly, by replacing the dependent variable with the difference between the natural logarithm of the sale price and the corresponding tax value:

$$\tilde{p}_i = p_i - a_i \tag{5}$$

$\tilde{p}_i$ approximates the percentage premium or discount paid in a given transaction, relative to the property's most recent tax value.[6]

Table 2 shows that average values of $\tilde{p}_i$ are lower in transactions involving migrant buyers and sellers from the same ethnic group. However, $\tilde{p}_i$ captures price premiums or discounts due to buyer-seller interaction only if differences in unobservable property or location quality are fully controlled for. Since our model accounts for virtually all observable property differences, we assume that unobserved differences are also controlled for. Based on this approach, we estimate the following regression model:

[6] This is similar to Avenancio-León and Howard (2022), who analyze the difference between market prices and tax values to study discrimination in property assessments among U.S. homeowners. Here, we treat tax values as exogenous because they are set on January 1 of the transaction year based on the previous year's market conditions.

$$\tilde{p}_i = \mu_{b(i)} + \gamma_{s(i)} + \delta_{c(i)} + \beta\, migrant_i + \theta\, match_i + \psi\,(migrant_i \times match_i) + \varepsilon_i, \qquad (6)$$

where, again, transactions between Dutch buyers and migrant sellers are the omitted group in the main specification.[7] Accordingly, all coefficients are interpreted as relative to the average price premium or discount in these transactions, within a fixed-effect cell. The coefficient of interest, ψ, does therefore not measure whether same-ethnicity transactions among migrants differ from the property's tax value per se, but rather whether the difference between transaction price and tax value is systematically higher or lower than in other types of buyer-seller interactions.

We estimate price differentials analogously to tax values, using the same set of fixed effects across models. The resulting coefficients, reported in Panel B of Table 3, suggest that same-ethnicity transactions among migrants involve a substantial price discount. Within a neighborhood-by-year-quarter, migrant buyers who purchase a home from an in-group seller pay a 5.5% lower price, compared to those buying from another seller. Relative to indigenous Dutch buyers purchasing from Dutch sellers, they pay a 4.7% lower price ($0.008 - 0.055$). Controlling for buyer and seller ethnicity and financials reduces the estimated price discount to 4.2%, whereas including property fixed effects further reduces it to 3.7%. The stability of the observed price discount is notable, especially given that by including property fixed effects, which lowers the sample by more than three-quarters, all differences in property values are accounted for. Finally, in the migrant-only sample, the estimated discount in same-ethnicity transactions is equal to 4.5%.

Overall, our findings indicate that migrant homebuyers receive a substantial discount when purchasing from a seller who shares their ethnic background. Scaled to the average tax value in same-ethnicity transactions, this discount amounts to approximately €10,000, representing roughly 15% of the total liquid assets of the average buyer and seller in the sample. Before examining the mechanisms underlying this discount, we assess its robustness using additional tests.

4.3. Ethnic Matching Discounts Are Highly Robust

An obvious concern related to the estimated price discount is based on the fact that it pools all buyers and sellers with any migration background. Therefore, observed price discounts may be driven by few ethnic groups. In order to understand whether ethnic matching discounts are a broad phenomenon, this needs to be addressed. Therefore, rather than combining all into one category ($migrant_i$), we estimate separate models for each the largest migrant groups in the Dutch market (e.g., $turkish_i$, $surinamese_i$, etc.).

The resulting estimates are visualized in Figure 4. They yield two main insights: First, discounts in same-ethnicity transactions are widespread and not driven by a few outlier groups. Including property fixed effects substantially reduces the sample size and widens

[7] In Appendix A.1, we estimate an alternative specification where we create a categorical variable for all different forms of buyer-seller interaction.

Table 3: Ethnic Matching and Transaction Outcomes

	Dep. Variable: log(Tax Value)				
Panel A: Tax Values	(1)	(2)	(3)	(4)	(5)
Migrant Buyer	−0.003*	0.003			
	(0.001)	(0.002)			
Matched	0.005***	−0.002*	0.015***	0.002	
	(0.001)	(0.001)	(0.002)	(0.002)	
Migrant Buyer × Matched	−0.023***	−0.007	−0.016***	−0.003	−0.001
	(0.004)	(0.005)	(0.005)	(0.003)	(0.004)
Fixed Effects:					
Neighborhood × Year-Quarter	✓	✓	✓	✓	✓
Buyer & Seller Income Decile	✗	✓	✓	✓	✓
Buyer & Seller Fin. Assets Decile	✗	✓	✓	✓	✓
Buyer & Seller Ethnicity	✗	✗	✓	✓	✓
Property	✗	✗	✗	✓	✗
Observations	1,985,104	1,750,528	1,750,472	410,443	49,575
Adjusted R^2	0.657	0.710	0.707	0.992	0.838

	Dep. Variable: log(Price) - log(Tax Value)				
Panel B: Price Differentials	(1)	(2)	(3)	(4)	(5)
Migrant Buyer	0.010***	0.007***			
	(0.001)	(0.001)			
Matched	0.008***	0.004***	0.000	0.001	
	(0.001)	(0.001)	(0.001)	(0.002)	
Migrant Buyer × Matched	−0.055***	−0.050***	−0.042***	−0.038***	−0.045***
	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)
Fixed Effects:					
Neighborhood × Year-Quarter	✓	✓	✓	✓	✓
Buyer & Seller Income Decile	✗	✓	✓	✓	✓
Buyer & Seller Fin. Assets Decile	✗	✓	✓	✓	✓
Buyer & Seller Ethnicity	✗	✗	✓	✓	✓
Property	✗	✗	✗	✓	✗
Observations	1,985,104	1,750,528	1,750,472	410,443	49,575
Adjusted R^2	0.473	0.488	0.489	0.834	0.580

Notes: This table shows differences in transaction outcomes between same-ethnicity transactions among migrants and other transactions. In Panel A, the dependent variable is the natural log of a properties last assessed tax value before the transaction. In Panel B, the dependent variable is the difference between the natural log of the sale price and the natural log of the property's last tax value. In columns (1) - (4), the model is estimated on the full transaction sample. In column (5), the sample includes only transactions involving both a migrant buyer and a migrant seller. Standard errors are clustered at the neighborhood and at the year-quarter level, with *, ** and *** denoting statistical significance at the 10%, 5% and 1% level, respectively.

confidence intervals, but leaves the overall pattern and effect sizes unchanged. However, point estimates for individual ethnic groups are affected, changing the relative order of the coefficients. Second, price discounts in larger migrant groups are smaller than average. For most ethnic groups with substantial activity in the Dutch housing market, estimated discounts are smaller (in absolute terms) than the pooled effect, suggesting that the overall effect is partly driven by smaller migrant groups. We return to this issue below when investigating the underlying mechanism.

A more fundamental concern is that price discounts may not reflect ethnic preferences, but instead arise from unobservable property or location characteristics. Our empirical strategy addresses this concern in several ways. Since all models include neighborhood-by-year-quarter fixed effects, location effects would only matter if same-ethnicity transactions occur in housing blocks of lower unobservable quality within a neighborhood. Moreover, including property fixed effects ensures that all time-invariant property and location characteristics are controlled for. Any remaining bias would therefore arise from time-varying property characteristics. One potential source is differences in maintenance: if migrant homeowners who eventually sell to a co-ethnic invest less in property upkeep, this could lead to observed price discounts in same-ethnicity transactions.[8] Although we see no reason to expect this, it cannot be fully ruled out in the baseline framework.

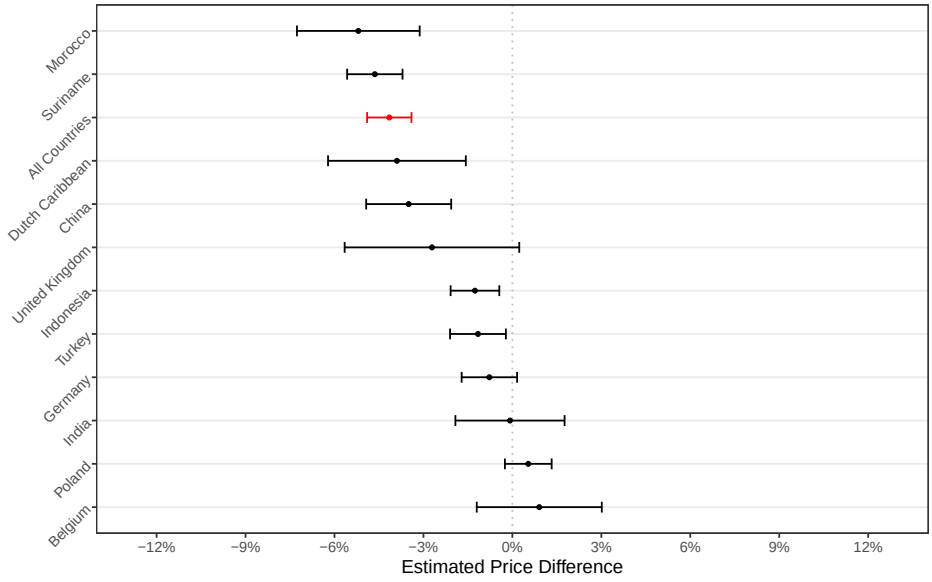
Therefore, we conduct an additional test, which allows us to distinguish genuine price discounts from confounding factors. This test is based on the simple premise that if a buyer gets a discount due to her interaction with the seller, she should earn a higher return when selling the same home in a subsequent transaction.[9] If, instead, the discount reflects any omitted factor associated with the property or its location, this would also reduce the sale price in the future transaction. In that case, the initial buyer would earn no outsized return.

To implement this test, we restrict the sample to all transactions for which a subsequent transaction is recorded and calculate the annualized (unlevered) return between both transaction dates: $r_{is} = \frac{P_{is}}{P_{it}}^{\frac{1}{(s-t)}} - 1$, where P_{it} is a property's initial transaction price at time t, and P_{is} is the price in the subsequent transaction. Since we measure transaction dates at quarterly level of detail, we allow t and s to be non-integers. We re-estimate the baseline model from (6), using r_{is} as dependent variable. Similar to Goldsmith-Pinkham and Shue (2023), we control for location choice and timing of both purchase and subsequent sale in an increasingly tight way.

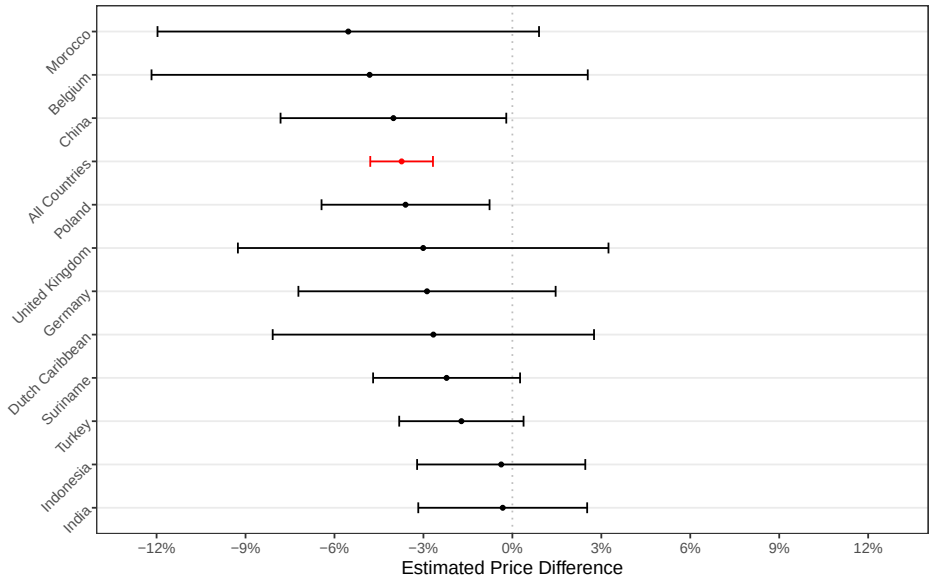
The resulting coefficients are reported in Table 4. Across specifications, we find that those who make a same-ethnicity purchase earn a significantly higher return when reselling the property. In the baseline model with no controls, migrants buying from co-ethnic sellers make subsequent returns that are 4.2% higher (0.083 − 0.041) than

[8] This does not require migrant homeowners to invest less in maintenance on average, but specifically those who sell to a same-ethnicity buyer.

[9] The following simple example illustrates this: consider two identical properties, A and B, that are located in the same neighborhood and both sell twice, at identical dates, t and $t+1$. At time t, property A sells at a lower price than property B, while they both sell at the same price (i.e., their market value) at time $t+1$. Consequently, the initial buyer of property A has made a higher return than that of property B.



(a) Excl. Property Fixed Effects



(b) Incl. Property Fixed Effects

Figure 4: Price Discounts by Ethnic Group

Notes: This figure shows estimated price differentials in same-ethnicity transactions based on separate regressions for various migrant groups. Panels show results from models excluding (N = 1,750,472) and including (N = 410,443) property fixed effects, respectively. Estimates from the full model are shown in red. They correspond to the estimates from columns (3) and (4) in Panel B of Table 3. Error bands indicate 95% confidence intervals.

those earned by indigenous Dutch buyers purchasing from Dutch sellers. When we include both neighborhood-by-initial-purchase-year-quarter and neighborhood-by-future-sale-year-quarter fixed effects as in Goldsmith-Pinkham and Shue (2023), estimated returns are 5.1% higher. In the full model including all buyer and seller financials as well as their ethnic background, the returns remain 3.6% higher, which is remarkably similar to the initial price discount estimated above. We conclude, therefore, that price discounts reflect a deliberate decision made by migrant sellers in favor of co-ethnic buyers, rather than any unobserved factors related to the property or its location.

Table 4: Ethnic Matching and Subsequent Returns

	Dep. Variable: Annualized Return				
	(1)	(2)	(3)	(4)	(5)
Intercept	0.558***				
	(0.002)				
Migrant Buyer	−0.032***	−0.030***	−0.028***	−0.031***	
	(0.003)	(0.003)	(0.002)	(0.003)	
Matched	−0.041***	−0.016***	−0.015***	−0.015***	0.000
	(0.007)	(0.002)	(0.002)	(0.003)	(0.006)
Migrant Buyer × Matched	0.083***	0.046***	0.057***	0.066***	0.036**
	(0.011)	(0.010)	(0.006)	(0.009)	(0.016)
Time Difference			0.134***		
			(0.002)		
Fixed Effects:					
Neighborhood × Year-Quarter Purchase	✗	✓	✓	✓	✓
Neighborhood × Year-Quarter Sale	✗	✗	✗	✓	✓
Year-Quarter Purchase × Year-Quarter Sale	✗	✗	✗	✓	✓
Buyer & Seller Income Decile	✗	✗	✗	✗	✓
Buyer & Seller Fin. Assets Decile	✗	✗	✗	✗	✓
Buyer & Seller Ethnicity	✗	✗	✗	✗	✓
Observations	405,939	305,592	305,592	214,236	177,454
Adjusted R^2	0.001	0.416	0.701	0.811	0.835

Notes: This table shows differences in annualized returns at subsequent sale, comparing same-ethnicity transactions among migrants and other transactions. The dependent variable is the annualized unlevered return between two sale dates. The independent variables Migrant Buyer and Matched are measured at the initial transaction. Standard errors are clustered at the neighborhood and at the year-quarter level, with *, ** and *** denoting statistical significance at the 10%, 5% and 1% level, respectively.

5. Underlying Mechanism

Price discounts in housing transactions based on the shared ethnicity of buyers and sellers have not been documented before.[10] These observed discounts do not align with established mechanisms such as discriminatory steering or homophily (we investigate these alternative mechanisms in Appendix A.3). Instead, they suggest that sellers with migration background are willing to forgo financial surplus by giving a discount to their co-ethnics. It is natural to ask, therefore, which underlying mechanism leads to this behavior. We investigate this in the current section, by leveraging additional information from the administrative and transaction data. Before that, we consider the possibility that discounts are instead driven by non-arms-length transactions, which may occur more frequently in same-ethnicity transactions.

5.1. Non-Arms-Length Transactions Explain Half of the Observed Discount

Our transaction data include all sales of existing residential properties, including non-arms-length transactions. This is a key confounding factor, as such transactions may bias estimates of price discounts. Non-arms-length transactions—particularly intra-family sales—occur more frequently among buyers and sellers of the same ethnic group. Moreover, these transactions are likely to involve price discounts relative to standard sales.[11] To investigate this, we use administrative records to construct three binary proxies for non-arms-length transactions.

First, we identify intra-family transactions using linked family network data. This variable equals 1 whenever the buyer and seller share any family tie, regardless of the type, or if they are parters. This represents the clearest form of non-arms-length transactions, as intra-family sales are typically not financially motivated. Intra-family sales are also more frequent among same-ethnicity transactions between migrants (22%) than among Dutch-to-Dutch sales (4%). Second, we define "local buyers" as those who previously resided in the same neighborhood where the transaction occurs. This is a less precise proxy for non-arms-length transactions, as it may also reflect buyers' preferences or local market knowledge (Cvijanović and Spaenjers, 2021). Nonetheless, differences are substantial, as 26% of matched transactions among migrants involve local buyers, compared to 16% of Dutch-to-Dutch sales. Finally, we identify the presence of sell-side brokers and classify transactions without a broker as unbrokered. Here, again, large differences exist: 73% of transactions between same-ethnicity migrants are unbrokered, according to our proxy, compared to 44% of Dutch-to-Dutch transactions. As explained in Section 2.2, this variable is measured with error, as it only captures brokers affiliated with the largest industry association in the Netherlands. Moreover, the absence of a sell-side broker does not necessarily indicate that the transaction was not at arm's length.

[10] Box-Couillard and Christensen (2024) find lower prices in same-race transactions in the U.S. context with only few racial groups. However, they attribute this finding to discrimination by the majority group, rather than deliberate discounts made by same-race sellers. In contrast, Agarwal et al. (2019) find that same-ethnicity transactions can involve premiums or discounts, depending on the neighborhood composition.

[11] Specifically, if the sale price falls below the tax value ($\tilde{p}_i < 0$), the difference is subject to gift tax.

Sell-side brokers may also moderate price discounts arising due to ethnic in-group favoritism or trust—mechanisms that we will discuss below. To test how these three factors interact with observed price discounts in same-ethnicity transactions between migrants, we extend the baseline model as follows:

$$\begin{aligned}\tilde{p}_i = {} & \mu_{b(i)} + \gamma_{s(i)} + \delta_{c(i)} + \beta\, migrant_i + \theta\, match_i + \omega\, interaction_i \\ & + \psi\,(migrant_i \times match_i) + \phi\,(migrant_i \times interaction_i) \\ & + \lambda\,(match_i \times interaction_i) + \pi\,(migrant_i \times match_i \times interaction_i) + \varepsilon_i, \end{aligned} \quad (7)$$

where $interaction_i$ is a placeholder for the three different variables introduced above: $intra_family_i$, $local_buyer_i$, and $unbrokered_i$. We are particularly interested in ω, which captures the baseline effect of each variable, as well as in ψ and π, which contrast same-ethnicity discounts in transactions where the additional factor is either present or not present.

The results of estimating the fully interacted model, separately for all three interaction terms, are reported in Table 5. First, intra-family sales—the clearest form of non-arms-length transactions—account for roughly half of the observed price discount in same-ethnicity transactions among migrants. This is not because migrant sellers give larger discounts to family members, but rather reflects the higher frequency of intra-family sales in same-ethnicity transactions, combined with an average discount of about 10%. Local buyers pay lower prices on average, and those with a migration background receive an even larger discount from in-group sellers. Nonetheless, the baseline discount in same-ethnicity transactions remains significant at 3% for buyers from outside the neighborhood. Finally, the involvement of a sell-side broker is crucial for the existence of price discounts: when a broker is involved, no price differential is observed, whereas in unbrokered transactions, discounts exceed 5%. This suggests that price reductions reflect deliberate choices by sellers interacting directly with buyers, rather than transactions mediated by an intermediary.

To assess the remaining price discount after accounting for non-arms-length transactions, we remove all transactions involving family members or local buyers and re-estimate the baseline model separately for each major migrant group. The results are shown in Figure 5. Green bars replicate the baseline effect from panel (a) of Figure 4 (N = 1,750,472), black bars reflect the sample excluding intra-family transactions (N = 1,680,677), and blue bars further exclude transactions with local buyers (N = 1,444,043). Consistent with the pooled regression results, intra-family transactions contribute more to the observed price discount than local buyer transactions. Importantly, in the pooled sample, non-arms-length transactions explain a larger share of the discount than in the largest migrant groups individually, suggesting that intra-family sales are especially prevalent among smaller migrant groups. Nonetheless, a highly significant price discount of approximately 2% persists even after excluding all transactions likely to involve pre-existing connections between buyers and sellers.

Table 5: Price Discounts: Underlying Mechanism

	Dep. Var: log(Price) − log(Tax Value)		
	(1)	(2)	(3)
Matched	0.002**	0.001	0.001
	(0.001)	(0.001)	(0.001)
Interaction	−0.099***	−0.018***	−0.010***
	(0.010)	(0.002)	(0.002)
Matched × Interaction	0.000	−0.005**	−0.003**
	(0.004)	(0.001)	(0.001)
Migrant Buyer × Interaction	−0.015**	−0.003*	0.003**
	(0.005)	(0.001)	(0.001)
Migrant Buyer × Matched	−0.019***	−0.030***	−0.002
	(0.003)	(0.003)	(0.003)
Migrant Buyer × Matched × Interaction	0.016*	−0.032***	−0.051***
	(0.006)	(0.004)	(0.004)
Fixed Effects:			
Neighborhood × Year-Quarter	✓	✓	✓
Buyer & Seller Income Decile	✓	✓	✓
Buyer & Seller Fin. Assets Decile	✓	✓	✓
Buyer & Seller Ethnicity	✓	✓	✓
Interaction Term	Intra-Family	Local Buyer	Unbrokered
Observations	1,750,472	1,750,278	1,598,731
Adjusted R^2	0.500	0.491	0.501

Notes: This table shows differences in price discounts between matched and unmatched transactions, and how these discounts vary based on additional transaction characteristics. It is based on the extended regression model from (7). Each column reports results from a model with a different interaction term. Standard errors are clustered at the neighborhood and year-quarter level. Standard errors are clustered at the neighborhood and at the year-quarter level, with *, ** and *** denoting statistical significance at the 10%, 5% and 1% level, respectively.

5.2. Remaining Price Discounts Are Driven By In-Group Favoritism

We interpret the remaining 2% price discount, after excluding all potential non-arms-length transactions, as reflecting a causal effect of shared ethnicity between buyers and sellers. The question remains, however, why sellers would be willing to give up around €5,000, on average, to sell their home to a co-ethnic, rather than to another buyer. In the final part of the analysis, we investigate two candidate explanations for this behavior, which are based on distinct but related concepts: in-group trust and in-group favoritism. While we cannot test the importance of these mechanisms in a causal way, our data offers

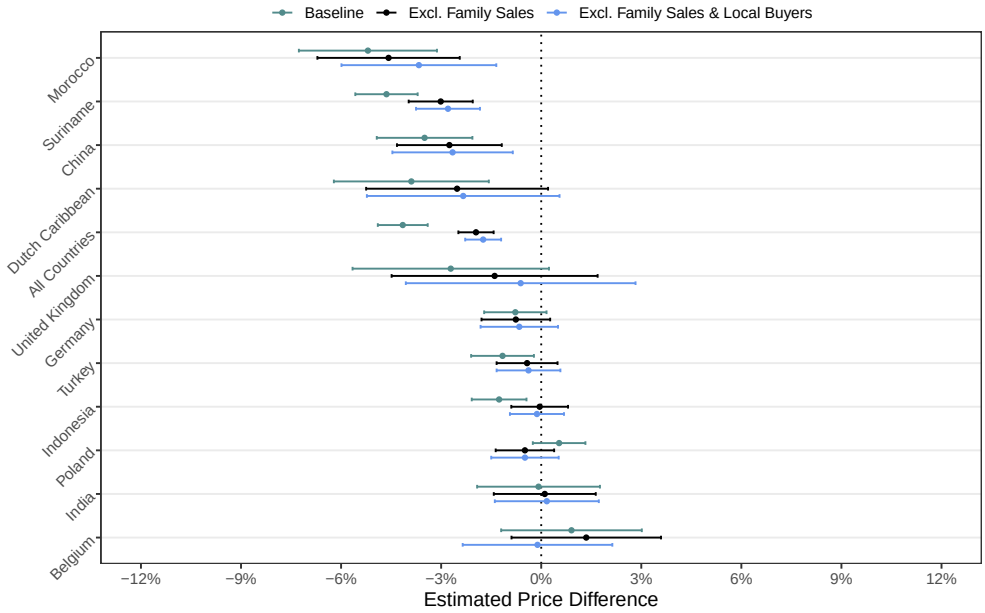


Figure 5: Price Discounts in Arms-Length-Transactions

Notes: This Figure visualizes price discounts in transactions between migrants of the same ethnic background. Coefficient estimates (error bands show 95% confidence interval) are based on equation (6), estimated either on the full sample (green), or a sample that excludes intra-family transactions (black) and local buyers (blue).

a number of suitable proxies to assess whether observed discounts align with either of them.

Trust levels in economic exchanges tend to be higher between people who share the same cultural background (Guiso et al., 2009). This could be of particular relevance in housing transactions, where buyers often make conditional offers that only become binding once certain conditions are met. In the Dutch market, it is very common that offers are conditional on mortgage approval. As Reher and Valkanov (2024) show, the uncertainty around buyers' mortgage approval can be so undesirable for sellers that they are willing to forgo substantial financial surplus in order to avoid it. In this setting, trust may act as a key moderating factor, leading sellers to offer price discounts when transacting with same-ethnicity buyers. Our first measure of trust therefore indicates whether buyers obtained a mortgage to finance the purchase.[12] If higher in-group trust is the driving factor behind price discounts, we would expect larger discounts in mortgage-financed transactions. For the second proxy, we identify sellers who have already made a subsequent home purchase just before the transaction (i.e., in the transaction year of the previous one). Arguably, these sellers are more time-constrained, as they may

[12]Since we do not have access to loan-level data, we construct this variable based on household-level balance sheet data, and label a transaction as mortgage-financed if the buyer's mortgage debt has increased between January 1 of the purchase year and January 1 of the following year.

need to access their home equity to finance their next purchase. In that case, a seller may be willing to offer discounts to buyers who they perceive as more trustworthy.[13] As a third proxy, we use a country-level measure of in-group versus out-group trust, which does not vary at the transaction level. This measure, developed by Schulz et al. (2019), combines items from the World Values Survey (Haerpfer et al., 2020) to capture the extent to which individuals place greater trust in in-group members (e.g., family, neighbors, acquaintances) relative to out-group members (e.g., foreigners or individuals of a different religion).[14] If higher trust of same-ethnicity buyers leads sellers to give a discount, we expect this behavior to be especially prevalent among sellers from countries with high levels of in-group trust.

Turning to measures of in-group favoritism, we start by comparing sellers who are first-generation migrants to those who are second-generation. This is motivated by the fact that, with increased length of stay, migrants tend to assimilate to the culture of the host country and relinquish that of their origin country (Constant and Zimmermann, 2008), even though this process is complex and heterogenous. Therefore, we hypothesize that first generation migrants exhibit stronger in-group bias towards their co-ethnics, compelling them to offer price discounts in same-ethnicity transactions. The second proxy relates to the concept of inequity aversion (Fehr and Schmidt, 1999), whereby individuals suffer a disutility if they perceive a distribution of outcomes as inequitable. While inequity aversion is most pronounced for disadvantageous outcomes, advantageous inequality can also entail a utility cost. In other words, decision makers are willing to give up some financial surplus in order to achieve a more equitable outcome. Chen and Li (2009) show that this behavior is more pronounced in interactions between in-group members. In contrast to experimental settings, housing transactions lack a clear reference point that defines a fair division of surplus between buyer and seller. To proxy for advantageous outcomes for the seller, we calculate the financial return that the seller has made since purchasing the unit, based on the difference in tax values.[15] We hypothesize that sellers who realize high returns on their property are more likely to offer price discounts, particularly when interacting with co-ethnic buyers, consistent with in-group favoritism. For the final proxy, we rely on Schulz et al. (2019) once again, and incorporate the kinship intensity index (KII). This index, composed based on data from the Ethnographic Atlas, captures to what degree societies are based on kin-based institutions (e.g, co-residence of extended families, community endogamy). One aspect of kinship-based societies is a stronger emphasis on in-group loyalty, compared to more individualistic societies. We test, therefore, whether sellers with a migration background from a country with strong kinship norms are more prone to give discounts to in-group members.

Empirically, we incorporate these different proxies for in-group trust and favoritism as

[13] Relatedly, Koster and Rouwendal (2024) show that home sellers are willing to sell at lower prices in order to achieve a shorter time on market, especially when they have already moved to a new home.

[14] Concretely, the variable calculates the difference between out-group trust and in-group trust. Negative values indicate countries in which in-group trust is higher than out-group trust.

[15] Returns are calculated as: $(a_t - a_p)/a_p$, where a_t denotes the current tax value and a_p denotes the tax value in the year that the current seller has purchased the property

interaction terms in the baseline model in equation (6). To ease interpretation by reducing the number of terms, we focus on the migrant-only sample, where all transactions involving indigenous Dutch buyers or sellers are removed.[16] This allows us to examine only variation in the average discount in transactions between same-ethnicity migrants. The estimation results are presented in Table 6. The estimates based on the trust proxies, reported in columns (1) – (3), provide little support for the hypothesis that price discounts are driven by elevated trust toward same-ethnicity buyers. Contrary to a trust-based explanation, discounts are smaller—rather than larger—when sellers have already made a subsequent purchase or when buyers rely on mortgage financing. Similarly, country-level differences in outgroup-versus-ingroup trust have no effect on observed price discounts.

Instead, the findings reported in columns (4) – (6) support the notion that observed discounts are related to in-group favoritism. First, price discounts are driven entirely by first-generation migrants, while no significant differences are observed among second-generation migrant sellers. Second, we find that discounts are related to the financial gain that a seller has realized: per 10 percentage point increase in housing returns, same-ethnicity transactions sell at a 0.2% lower price, compared to other transactions. Finally, sellers from countries characterized by higher kinship intensity give larger discounts to their in-group members. A one-unit increase in this standardized measure—approximately the difference between the United States and Hungary—is associated with a 1.4% lower price in same-ethnicity transactions relative to others. Taken together, while not causal, these findings suggest that price discounts in matched transactions reflect an altruistic inclination toward co-ethnic buyers.

6. Conclusion

This paper uses Dutch administrative data to study ethnic matching in the housing market and its implications for transaction prices. Combining the near universe of residential property transactions with detailed records on the migration background of buyers and sellers, we document that buyers and sellers who share the same migration background match with each other at rates that substantially exceed what random search would predict. This pattern is widespread: it holds across all migrant groups we examine, within narrowly defined local sub-markets, and is more pronounced among groups that represent a small share of the buyer population. Ethnic matching in housing transactions is therefore a broad-based phenomenon that is distinct from neighborhood sorting due to ethnic homophily.

Turning to transaction prices, we find that same-ethnicity transactions are associated with a significant price discount of around 4% relative to otherwise comparable transactions. This discount is highly robust. It holds across migrant groups, survives the inclusion of property fixed effects, and is confirmed by an analysis of returns on sub-

[16] Note that, since the model is based on the migrant-only sample, the price discount in same-ethnicity transactions among migrants is captured by $match_i$, rather than $migrant_i \times match_i$, as in the baseline model.

Table 6: Ethnic Matching Discounts: Trust vs. In-group Favoritism

	Dep. Variable: log(Price) - log(Tax Value)					
	In-Group Trust			In-Group Favoritism		
	(1)	(2)	(3)	(4)	(5)	(6)
Interaction	0.022^{***}	0.010^{***}		-0.017^{***}	-0.017^{***}	
	(0.002)	(0.003)		(0.002)	(0.006)	
Matched	-0.021^{***}	-0.033^{***}	-0.009^{***}	0.004^{***}	-0.010^{**}	-0.014^{***}
	(0.004)	(0.007)	(0.003)	(0.004)	(0.005)	(0.003)
Matched × Interaction	0.025^{***}	0.030^{***}	0.005	-0.026^{***}	-0.021^{**}	-0.014^{***}
	(0.011)	(0.008)	(0.004)	(0.005)	(0.005)	(0.004)
Fixed Effects:						
Neighborhood × Year-Quarter	✓	✓	✓	✓	✓	✓
Buyer & Seller Income Decile	✓	✓	✓	✓	✓	✓
Buyer & Seller Fin. Assets Decile	✓	✓	✓	✓	✓	✓
Buyer & Seller Ethnicity	✓	✓	✓	✓	✓	✓
Interaction Term	Subsequent Purchase	Mortgage-Financed	Out-vs-In Trust	First-Gen Seller	Seller Return	Kinship Intensity
Observations	38,938	22,340	20,335	38,938	24,305	35,341
Adjusted R^2	0.617	0.642	0.398	0.616	0.640	0.396

Notes: This table shows differences in price discounts between matched and unmatched transactions, and how these discounts vary based on additional transaction characteristics. It is based on following model, estimated on the migrant-only sample: $\tilde{p}_i = \mu_{b(i)} + \gamma_{s(i)} + \delta_{c(i)} + \theta\, match_i + \psi\,(match_i \times interaction_i) + \varepsilon_i$. Each column reports results from a model with a different interaction term. Columns (1) – (3) include interaction terms that proxy for in-group trust as a mechanism behind price discounts in same-ethnicity transactions, whereas columns (4) – (6) test for in-group favoritism. Since the estimation is based on the migrant-only sample, there is no "Migrant Buyer" effect in this model. Therefore, in contrast to the baseline model from equation (6), price differences in same-ethnicity transactions among migrants are captured by "Matched". Standard errors are clustered at the neighborhood and at the year-quarter level, with *, ** and *** denoting statistical significance at the 10%, 5% and 1% level, respectively.

sequent sales, which suggests that discounted properties earn higher resale returns of comparable magnitude. Taken together, these findings indicate that price discounts reflect intentional rebates by sellers towards buyers who share their migration background, rather than differences in unobserved property or neighborhood characteristics. Importantly, the discount does not appear to reflect discrimination: Migrant buyers do not systematically overpay in transactions with out-group sellers, nor do they pay premiums in neighborhoods where their ethnic group is well-represented, which would be consistent with discriminatory steering by brokers.

Investigating the mechanisms behind same-ethnicity discounts, we find that around half of the discount is explained by non-arms-length transactions, particularly sales to family members and buyers from the same neighborhood. This pattern is especially

pronounced among small migrant groups. For larger and more established groups, however, a significant discount persists after removing likely non-arms-length transactions. Further analysis of the remaining discount points to in-group favoritism, rather than elevated in-group trust, as the dominant mechanism. The discount is largest for first-generation migrant sellers, sellers who have accrued a larger financial gain from their home, and sellers with a migration background from countries where kin-based institutions are especially strong.

Our findings have implications for the understanding of residential segregation. Even in the absence of discrimination by sellers, brokers, or lenders, preferential matching between ethnically similar buyers and sellers can reinforce patterns of segregation. The financial incentives embedded in same-ethnicity transactions—a price discount that sellers give voluntarily—provide a novel mechanism through which in-group preferences shape housing market outcomes. This mechanism operates within local sub-markets and is therefore orthogonal to the neighborhood-level sorting that has received the bulk of attention in the literature.

More broadly, this paper contributes to the growing body of evidence on ethnic in-group favoritism in real economic transactions. Prior work has documented similar patterns in lending, experimental games, and donation behavior. Our results extend this to the housing market, where the stakes are considerably higher: for most individuals, purchasing a home is the single largest financial transaction of their lifetime. That in-group preferences are strong enough to shape outcomes in a transaction of this magnitude underscores both their salience and their potential economic consequences.

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A. Further Empirical Results

A.1. Alternative Estimation of Price Differentials

A complication in the baseline model from equation 6 is that transactions between migrant buyers and Dutch sellers may constitute a non-natural benchmark group. This complicates the interpretation of the estimated coefficients. We therefore implement an alternative model, where we interact the ethnic background of buyers and sellers to construct a categorical variable that can take on five distinct values for the different possible combinations of seller-to-buyer matches: Dutch-to-Dutch (omitted), Dutch-to-migrant, migrant-to-Dutch, migrant-to-migrant-matched, migrant-to-migrant-unmatched. The last two values distinguish between transactions involving two migrants of identical or different ethnicity. Using this variable, we re-estimate the baseline model of price differentials. The resulting coefficients, reported in Table A.1, align with the main findings. Compared to all other types of buyer-seller interactions, transactions between same-ethnicity migrants involve a substantial price discount. In the full specification, involving property fixed effects, the estimated discount is somewhat smaller than that in the main text, at 2.7%. One reason may be that, due to perfect collinearity, this specification does not allow for the inclusion of buyer and seller ethnicity fixed effects.

A.2. Placebo Test: Random Match Permutation

The baseline results suggest that price discounts arise exactly when buyers and sellers who share the same migrant background transact with each other. To investigate whether discounts require "exact" matching of buyer and seller ethnicity, or whether they arise in other cases as well, we implement a simple placebo test.

Instead of assigning $Matched = 1$ when buyers and sellers share the same ethnic background, we randomly permute the matching structure across buyer groups and re-estimate the baseline model from equation 6 10,000 times using these counterfactual matches. For instance, in one simulated run, transactions by Turkish buyers may counterfactually be labeled as matched if they purchase from Moroccan seller, whereas those by Chinese buyers may be treated as matched if they transact with Dutch sellers. Evidence of systematic discounts under these placebo assignments would indicate that factors other than ethnic matching drive the observed price differentials.

However, our simulations provide no evidence for this. In Figure A.1, we plot a histogram of estimated treatment effects (Migrant Buyer × Matched) based on 10,000 simulated runs. As expected, the estimated coefficients resemble a normal distribution. In fact, the average price differential across simulations is slightly positive. In contrast, the "true" coefficient of -4.2%, estimated from the baseline model with buyer and seller financial and ethnicity fixed effects, lies far in the left tail of the distribution. In more than 99.5% of the simulations, the estimated price differential exceeds (i.e., is less negative than) that obtained under the true matching of buyer and seller ethnicity.

Table A.1: Ethnic Matching and Price Differentials

	Dep. Var: log(Price) − log(Tax Value)		
	(1)	(2)	(3)
Dutch-to-migrant	0.009***	−0.004***	−0.001
	(0.001)	(0.001)	(0.001)
Migrant-to-Dutch	0.004***	0.004***	0.008***
	(0.001)	(0.001)	(0.001)
Migrants (Unmatched)	−0.005***	0.000***	0.010***
	(0.001)	(0.001)	(0.002)
Migrants (Matched)	−0.048***	−0.045***	−0.027***
	(0.003)	(0.003)	(0.005)
Fixed Effects:			
Neighborhood × Year-Quarter	✓	✓	✓
Buyer & Seller Income Decile	✗	✓	✓
Buyer & Seller Fin. Assets Decile	✗	✓	✓
Property	✗	✗	✓
Observations	1,985,104	1,750,528	410,665
Adjusted R^2	0.472	0.488	0.833

Notes: This table shows differences in transaction outcomes between same-ethnicity transactions among migrants and other transactions. The dependent variable is the difference between the natural log of the sale price and the natural log of the property's last tax value. The model is estimated on the full transaction sample. Standard errors are clustered at the neighborhood and at the year-quarter level, with *, ** and *** denoting statistical significance at the 10%, 5% and 1% level, respectively.

A.3. Seller Discrimination and Neighborhood Steering

Most of the existing literature has studied the position of racial or ethnic minorities in the housing market through the lens of discrimination. The price discounts in same-ethnicity transactions that we document may be related to discrimination. For instance, rather than reflecting a discount granted by co-ethnic sellers, the observed pattern could reflect a premium that migrant buyers pay when transacting with out-group sellers. In order to establish ethnic matching discounts as a phenomenon that is distinct from the various forms of discrimination in the housing market, we therefore carry out an additional analysis.

The most commonly studied forms of discrimination in the market for owner-occupied housing include taste-based discrimination by sellers and discriminatory steering by brokers. Taste-based discrimination predicts that minority buyers have to pay a premium in order to compensate the prejudiced seller for their disutility from interacting with them. Evidence for taste-based discrimination, especially against African American and His-

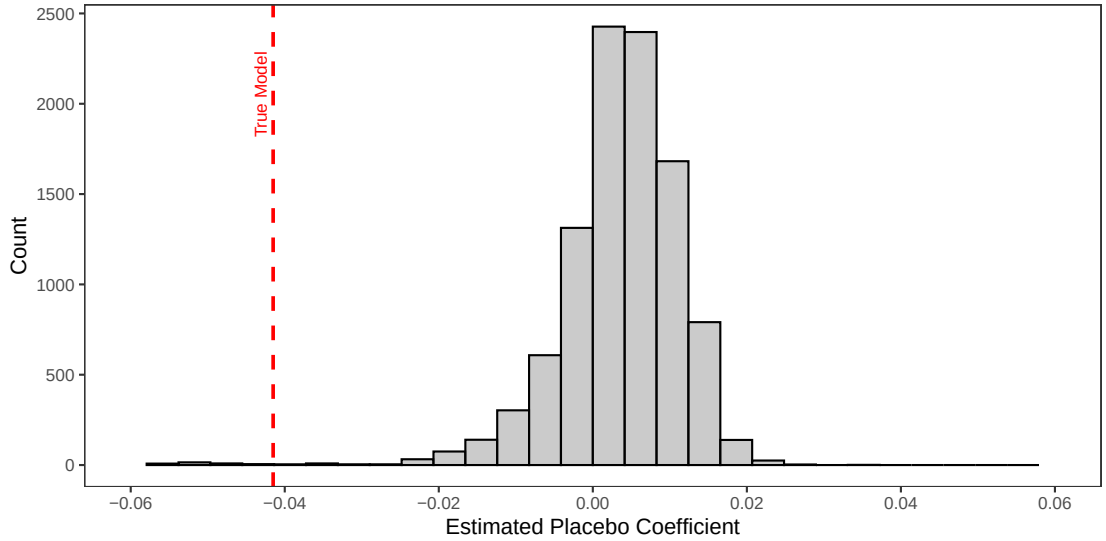


Figure A.1: Placebo Test: Random Allocation of Matching Dummy

Notes: This figure plots a histogram of estimated price differentials based on random permutations of country pairs that constitute an ethnic match. Each model is based on the main regression model specified in (7), including the full set of fixed effects apart from property fixed effects. Coefficients from the "true" model are shown by the dashed red line. Further details are given in the text.

panic buyers, has been found in the U.S. market (Box-Couillard and Christensen, 2024), though other studies question whether price premia are the result of outright taste-based discrimination (Bayer et al., 2017). Discriminatory steering represents the tendency of buy-side brokers to direct minority clients toward certain neighborhoods. In the U.S., steering of African American buyers away from White neighborhoods—which often offer better neighborhood amenities—is well documented (Ondrich et al., 2003). Effectively, by constraining minority buyers' choice set in this way, their effective demand in ethnic neighborhoods is increased. One key empirical prediction of discriminatory steering is that it may lead minority buyers to pay higher prices in ethnic neighborhoods than other buyers, whose choice sets are not constrained.[17]

To investigate the importance of taste-based discrimination and steering in our setting, we extend the baseline empirical model from (6), to incorporate information on the neighborhood in which a purchase occurs. Specifically, for each buyer from the largest migrant groups, we compute the share of co-ethnics in the population of the neighborhood where the purchase takes place. We define a neighborhood as "ethnic" for a given group if the share of co-ethnics exceeds the group's national population share in that year. Then, we extend the baseline model as follows:

[17] Empirically identifying discriminatory steering is complicated by the fact that it is observationally equivalent to neighborhood sorting based on preferences for homophily or amenities. Christensen and Timmins (2022) overcome this challenge by examining paired-actor audit studies.

$$\tilde{p}_i = \mu_{b(i)} + \gamma_{s(i)} + \delta_{c(i)} + \beta\, migrant_i + \theta\, match_i + \psi\,(migrant_i \times match_i) + \phi\,(migrant_i \times ethnic_neighborhood_{b(i)}) + \lambda\,(match_i \times ethnic_neighborhood_{b(i)}) + \pi\,(migrant_i \times match_i \times ethnic_neighborhood_{b(i)}) + \varepsilon_i. \quad \text{(A.1)}$$

This extended model allows us to contrast same-ethnicity price discounts with different forms of supply-side discrimination. As before, ψ captures price discounts in transactions between same-ethnicity migrants. β reveals whether migrant buyers have to pay a price premium, regardless of the seller's identity, which would be evidence for taste-based discrimination by sellers. We proxy for discriminatory steering, which concentrates migrant buyers' demand in ethnic neighborhoods, with ϕ. Finally, π, the coefficient on the triple-interaction, captures whether the discount in same-ethnicity transactions among migrants depends on the neighborhood's ethnic composition. This relates to Agarwal et al. (2019), who find that sellers give discounts in same-ethnicity transactions only in non-ethnic neighborhoods. We estimate the model separately for each migrant group relative to indigenous Dutch buyers, since $ethnic_neighborhood_{b(i)}$ varies by buyer ethnicity and is not constant across groups.

We visualize the coefficients of interest in Figure A.2. Across the board, we continue to find a significant price discount in same-ethnicity transactions between buyers and sellers with migration background (black bars). In contrast, there is no direct evidence for taste-based discrimination, as none of the migrant groups appears to be paying a premium when purchasing from an out-group seller (dark blue bars). Similarly, we find no consistent price premia for purchases in ethnic neighborhoods (green bars), indicating that discriminatory steering or homophily play a limited role. Finally, price discounts in same-ethnicity transactions between migrants appear to be somewhat smaller in ethnic neighborhoods (light blue bars), although this relationship is noisier and less consistent. In accordance with the findings of Agarwal et al. (2019), this suggests that sellers make price discounts to their co-ethnics predominantly in neighborhoods where their own group is underrepresented. Overall, these results indicate that ethnic matching discounts among migrants operate independently of other well-established mechanisms, such as taste-based discrimination or steering.

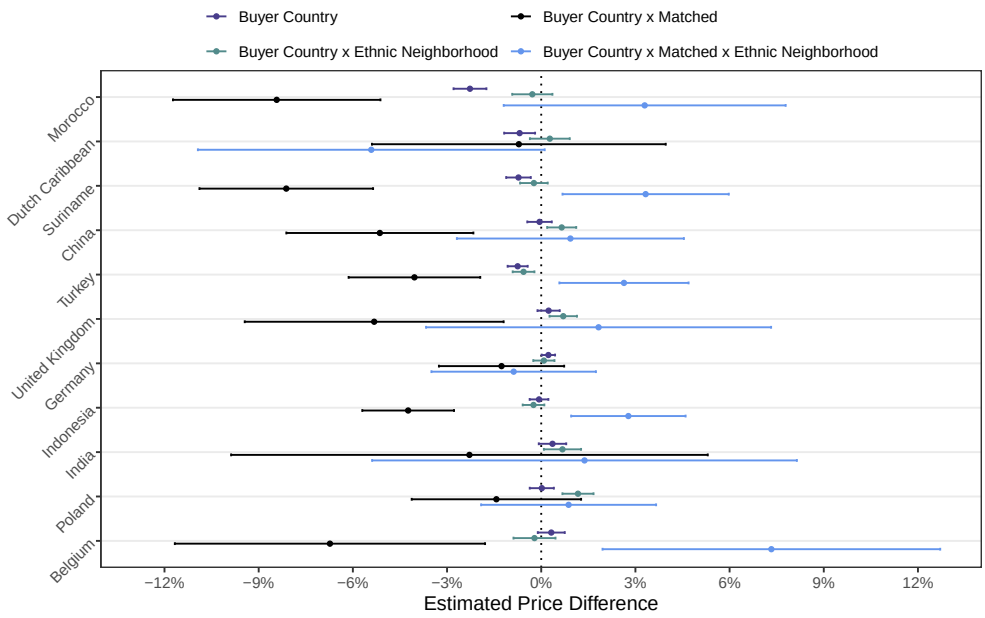


Figure A.2: Price Discounts and Neighborhood Composition

Notes: This Figure contrasts price discounts in same-ethnicity transactions with average price differentials for migrant buyers. In addition, it shows how both factors change, depending on whether a purchase is made in an "ethnic" neighborhood or not. Coefficient estimates are based on equation (A.1), error bands indicate 95% confidence intervals