

# The Evolution of Brand Preferences

## Evidence from Consumer Migration

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### Web Appendix

#### A Model Fit

Online Appendix Figure 1 shows the analogue of Figure 2 predicted from the model at the estimated parameters. Online Appendix Figure 2 shows the residuals. The residuals do not show any strong systematic patterns, suggesting the model successfully matches the qualitative features of the data.

#### B Decomposition by Demographics

Online Appendix Figure 3 shows the analogue of Figure 3 estimated separately for different demographic groups. For individual demographics, we assign the household the characteristics of the primary household member—i.e., the one whose life history information we use in our main estimation (see Section 2.2). Panel A plots relative shares separately for households where the primary household member has not or has completed a college degree. Panel B plots relative shares separately for households with annual income below or above \$55,000. Panel C plots relative shares separately for households where the primary household member is male or female. In no cases do we see systematic differences between demographic groups.

#### C Impact of Secondary Household Members

Online Appendix Figure 4 looks at the way the characteristics of household members other than the primary shopper influence purchases. To construct this figure, we first restrict attention to two-person households. We define the primary household member to be the one whose life history information we use in our main estimation (see Section 2.2), and the secondary household member to be the one whose information we do

not use. We focus on households where (1) the secondary household member was born in the household's current state of resident; or (2) the secondary household member is a migrant and was born in the same state as the primary household member. The figure shows that relative shares are higher when the secondary member is a non-migrant, consistent with the secondary member's preferences exerting some influence on purchases.

## D Accounting for Variation in Number of Purchases

Online Appendix Table 1 shows the analogue of Table 3 estimated using an FGLS specification that allows the variance of the error  $\eta_{ij}$  to depend on the number of purchases made by consumer  $i$  in module  $j$ . For each column, we first compute residuals from the estimated model presented in Table 3. We then regress the squares of these residuals on a constant and on the term  $\bar{y}_j(1 - \bar{y}_j)/n_{ij}$ , where  $\bar{y}_j$  is the average purchase share among migrant consumers in module  $j$  and  $n_{ij}$  is the number of purchases by consumer  $i$  in module  $j$ . Note that this term is a consistent estimator of the error variance if  $\hat{y}_{ij}$  is an average. Finally, we compute predicted values of the squared residuals and re-estimate the model using these predicted values as weights. The table shows that the estimates from Table 3 are essentially unchanged.

## E Placebo Exercise for Recently Introduced Brand Pairs

In Section 5.1 of the paper, we present evidence on brand pairs introduced in 1955 or later. We estimate the regression

$$(1) \quad \beta_{iw} = (\omega_0 + \omega_1 t_i^*) I(t_i^* \leq T_w) + [\omega_2 + \omega_3 t_i^*] I(t_i^* > T_w) + \varepsilon_{iw},$$

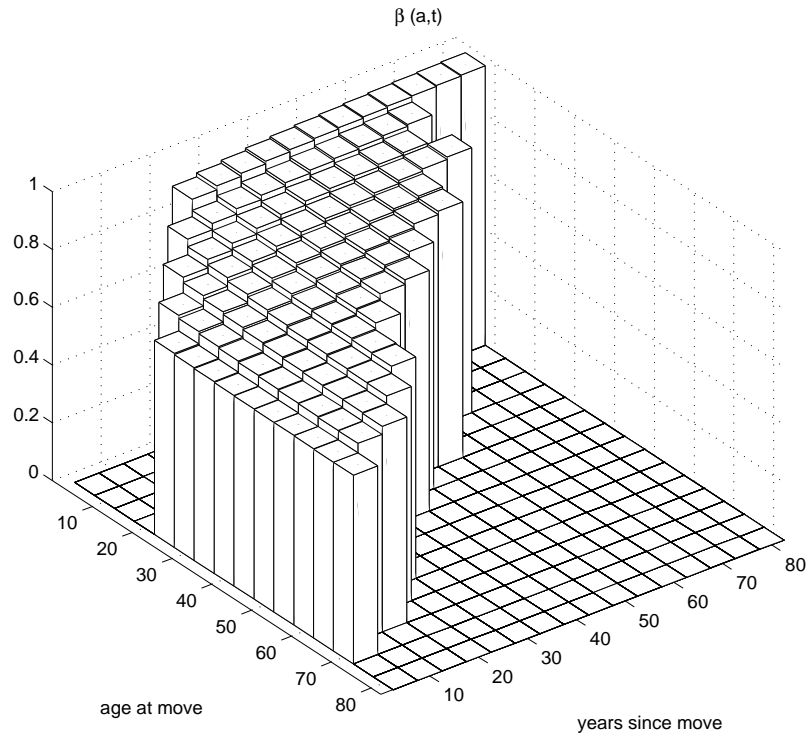
where  $T_w$  is the number of years at least one brand in pair  $w$  has been available,  $t_i^*$  is the number of years since  $i$  moved, and  $I(\cdot)$  is the indicator function. We confirm that the coefficient on decades since moving is highly significant for those moving after the pair in question was introduced ( $\omega_1 > 0$ ), but insignificant for those moving before the pair was introduced ( $\omega_3 \approx 0$ ). Moreover, we cannot reject that the average shares of migrants who moved before the pair was introduced have the same average shares as non-migrants in their current state of residence ( $\omega_2 \approx 1$ ).

In Online Appendix Table 2, we report the results of a placebo exercise that sheds light on the power of this test. For each brand pair, we replace the true year of introduction with a random year drawn uniformly between the minimum and maximum years of introduction in the sample. We then replicate the analysis in Table 4 on the data with random introduction years. In contrast to the real data, we strongly reject the null hypothesis that  $\omega_3 \approx 0$ . We also strongly reject the null hypothesis that  $\omega_2 \approx 1$ . This suggests that the failure to reject these hypotheses in Table 4 is informative about our identifying assumptions and does not simply reflect a lack of power.

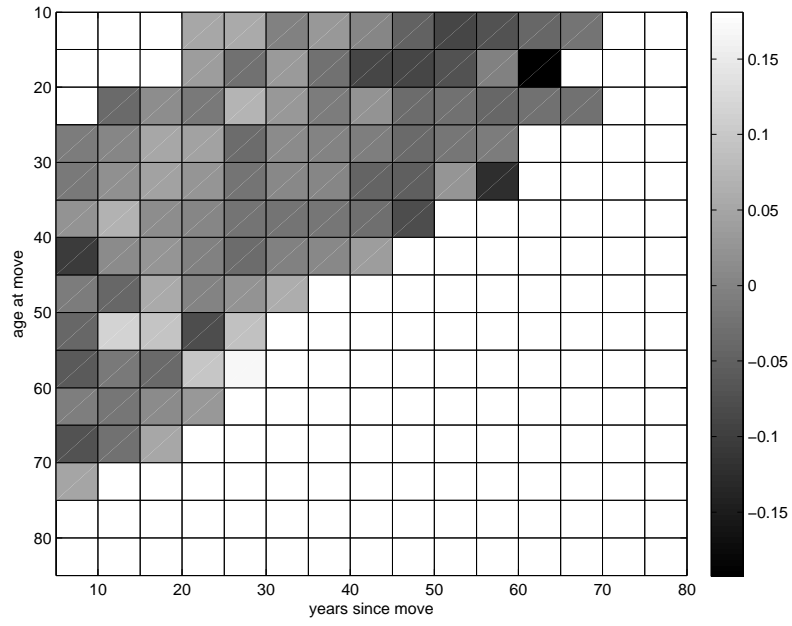
## F Overlapping Generations

Figure 4 suggests that migrants who leave their birth states at ages 0 – 4 have  $\beta$  values significantly less than one. For an age-0 migrant,  $\beta < 1$  is inconsistent with our model, because the migrant should have accumulated no brand capital from their birth state. It is consistent with an extended model, however, where the consumption of young children is influenced by their parents' preferences.

To explore this possibility, we extend our model to allow consumers to partially inherit the brand-stock of their parents. We replace the age at which a migrant moves,  $a^*$ , with  $a^* + T_{par}$  in Equation (8), with  $T_{par}$  being a practical measure of the strength of parental carry-over. We keep the number of years in state of residence at its original value  $t^*$ . We estimate  $\alpha$  and  $\delta$  for alternative values of  $T_{par} \in [20, 40, 60]$  years. Estimation results and the same counterfactuals as reported in Appendix B are presented in Online Appendix Table 3. Our qualitative conclusions are robust to this extension.

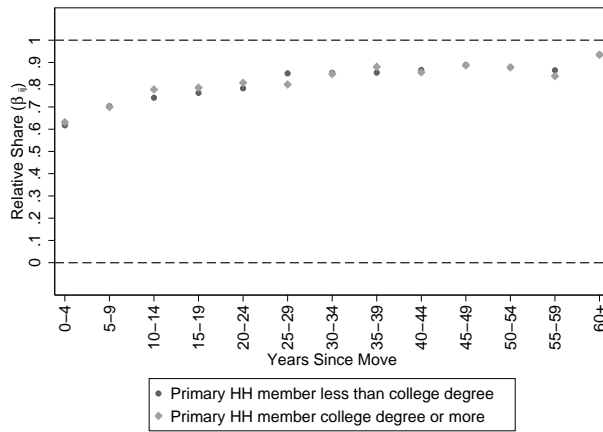


**Figure 1: Relative Shares (Fitted Values)**

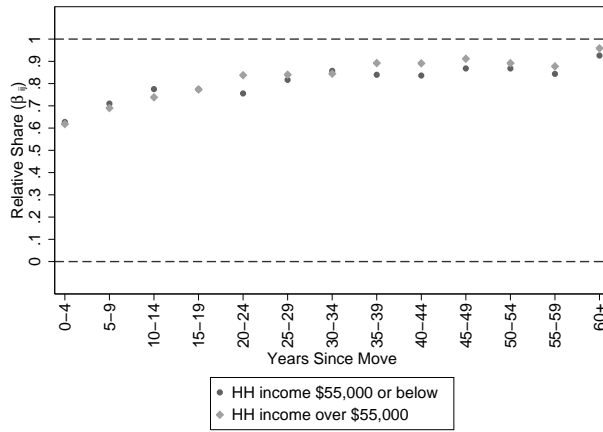


**Figure 2: Relative Shares (Residuals)**

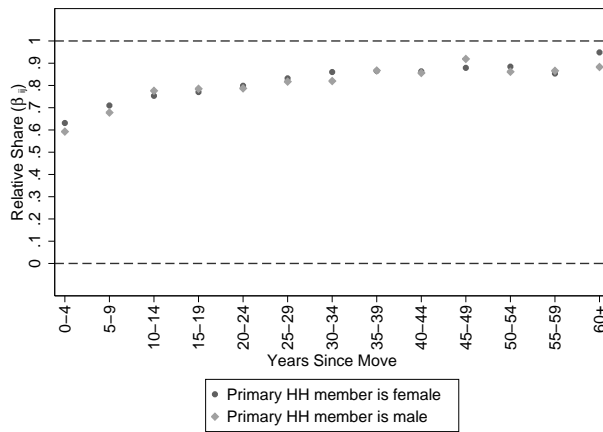
### A. Primary Household Member's Education



### B. Household Income

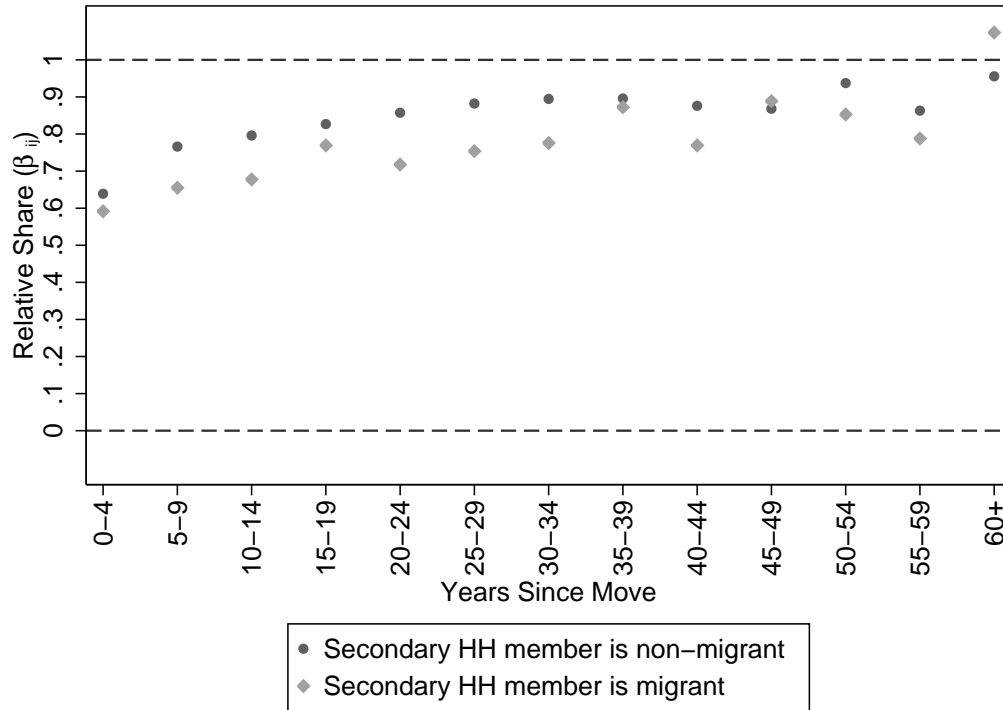


### C. Gender



**Figure 3: Sample Splits by Household Demographics**

Notes: Analogue of Figure 3 estimated separately for different demographic groups. For individual demographics, we assign the household the characteristics of the primary household member—i.e., the one whose life history information we use in our main estimation (see Section 2.2).



**Figure 4:** Sample Splits by Migration Status of Secondary Household Member

Notes: The sample is constructed from two-person households. We define the primary household member to be the one whose life history information we use in our main estimation (see Section 2.2), and the secondary household member to be the one whose information we do not use. We use households where (1) the secondary household member was born in the household’s current state of resident; or (2) the secondary household member is a migrant and was born in the same state as the primary household member.

**Online Appendix Table 1:** The Evolution of Brand Preferences for Migrants (FGLS)

Dependent variable: Relative share ( $\beta_{ij}$ )					
	(1)	(2)	(3)	(4)	(5)
Decades since move	0.101 (0.009)	0.081 (0.009)	0.078 (0.010)	- -	0.093 (0.016)
Decades since move squared	-0.009 (0.001)	-0.008 (0.001)	-0.007 (0.001)	- -	-0.009 (0.004)
Age (in decades) when moved	- -	-0.019 (0.006)	- -	-0.020 (0.006)	-0.013 (0.008)
Constant	0.623 (0.030)	0.708 (0.027)	- -	- -	0.670 (0.037)
Decades since move fixed effects	no	no	no	yes	no
Age when moved fixed effects	no	no	yes	no	no
Sample	all	all	all	all	age moved $\geq 25$
# modules	238	238	238	238	238
# HH-module observations	528621	528621	528621	528621	212957

Notes: The dependent variable  $\beta_{ij}$  is the share of a migrant's top-two brand purchases going to the top brand, scaled relative to non-migrants in her current and birth states.  $\beta_{ij} = 1$  implies her purchase share matches non-migrants in her current state.  $\beta_{ij} = 0$  implies her purchase share matches non-migrants in her birth state.



**Online Appendix Table 2: Brand Pairs Introduced after 1954 (Placebo)**

Dependent variable: Relative share ( $\beta_{ij}$ )			
	(1)	(2)	(3)
Moved after brand introduced:			
Decades since move ( $\omega_1$ )	0.007 (0.001)	0.009 (0.002)	0.013 (0.006)
Constant ( $\omega_0$ )	0.670 (0.053)	0.587 (0.055)	0.536 (0.062)
Moved before brand introduced:			
Decades since move ( $\omega_3$ )	0.003 (0.001)	0.003 (0.001)	0.006 (0.002)
Constant ( $\omega_2$ )	0.751 (0.061)	0.712 (0.068)	0.575 (0.082)
Only brand pairs introduced after			
	1954	1975	1985
# brand pairs	52	25	13
# HH-pair observations	86805	41695	20143

Notes: The table presents a placebo version of Table 4 in which the actual introduction dates of brands are replaced with randomly assigned dates. The dependent variable  $\beta_{ij}$  is the share of a migrant's top-two brand purchases going to the top brand, scaled relative to non-migrants in her current and birth states.  $\beta_{ij} = 1$  implies her purchase share matches non-migrants in her current state.  $\beta_{ij} = 0$  implies her purchase share matches non-migrants in her birth state. The sample includes purchases of brand pairs with true introduction dates of 1955 or later. The coefficients in the first two rows apply to migrants who moved after the first brand in the pair in question was introduced. The coefficients in the following two rows apply to migrants who moved before the first brand in the pair was introduced.

**Online Appendix Table 3:** Estimates from Overlapping Generations Model

Initial endowment of parents' capital ( $T_{par}$ )	$\alpha$	$\delta$	Years until convergence	Half-life of brand capital
20 years	0.634	0.964	8	19
40 years	0.632	0.959	8	16
60 years	0.630	0.957	8	16

Notes: This table presents estimates from a version of our model where the age  $a^*$  at which a migrant moves in Equation 8 is replaced by  $a^* + T_{par}$ .