

Appendix A- Logit comparison

Advantages of the nested logit approach developed in this paper over the logit models typically applied to residential sorting are the ability to relax substitution pattern restrictions and include differing tradeoffs across space. To determine the impact of implementing this new method on preference parameters and welfare estimates, we compare the nested logit results to those estimated with a logit model. Under the logit framework, utility is defined as

$$U_{jt}^n = \alpha_h^n H_h + \alpha_N^n N_{jt} + \alpha_S^n S_{jt} + \alpha_p^n p_h + \xi_{jt} + \epsilon_h^n \quad [A1]$$

This specification is similar to equation (1), but differs by dropping the school subscript, k . Thus, the choice indexed by neighborhood and time. Also, the school attendance boundary unobservable is not included in this model. All variables in the logit model are the same as the variables used in the nested logit model, aside from the inclusive value.

The estimation of utility in equation (A3) occurs in two stages, similar to the process for the nested logit, but only at one spatial scale incorporating all variables. First, the individual heterogeneity parameters and mean indirect utilities are estimated using a logit model, given by

$$P_{it}^n = \frac{\exp(\alpha_S^n S_{it} + \Theta_{jt})}{\sum_{j=1}^J \exp(\alpha_S^n S_{jt} + \Theta_{jt})} \quad [A2]$$

Second, the mean preference parameters are estimated by regressing the covariates on the mean indirect utilities via ordinary least squares using the equation

$$\Theta_{jt} = \alpha_{0s} + \alpha_h^0 H_h + \alpha_N^0 N_{jt} + \alpha_S^0 S_{jt} + \alpha_p^0 p_h + \sigma_{jt} + \xi_{jt} \quad [A3]$$

Using equations (A2) and (A3), utility is characterized in the logit framework. In equation (A3) we instrument for price using the same procedure applied to the nested logit model. Results for the second stage, first stage, willingness to pay, and policy counterfactuals are presented in Tables A1, A2, A3, and A4, respectively.

Table A1: Second stage logit results

Variable	Neighborhood	School
	Estimate	Estimate
yearly price index (1k)	-1.5846 (0.2829)***	
age	-0.0299 (0.0117)**	
square feet	0.0058 (0.0013)***	
baths	1.3227 (0.2300)***	
lot size (acres)	1.1318 (0.3462)***	
garage	1.6231 (0.3327)***	
stories	-1.2425 (0.4388)***	
distance to Baltimore City	-0.0888 (0.1052)	
agricultural preserves	3.3907 (1.0243)***	-23.5536 (10.2337)**
agricultural land	1.5865 (0.7675)**	2.3763 (4.1189)
industrial land	0.6682 (0.5303)	-0.9525 (2.5581)
multi-family land	-1.3037 (0.6319)**	0.5706 (2.7426)
commercial land	0.1833 (0.5768)	-2.2558 (3.4840)
residential land	2.3090 (0.4630)***	6.6959 (2.3944)***
critical ecosystem habitat	1.0943 (0.4448)**	0.6369 (1.0634)
adv. or prof. mat percent (3rd gr.)		-2.5970 (0.7009)***
constant		-1.3758 (1.8739)
Fixed Effects	High School	
N	12,021	

Standard errors in parenthesis are clustered at the high school level
 * p<0.10, ** p<0.05, *** p<0.01

Table A2: First stage logit heterogeneity parameters

Variable	Logit
	Estimate
adv. or prof. percent (3rd gr.) x income	0.0433 (0.0023)***
multi-family land school x income (1k)	-0.0244 (0.0057)***
critical ecosystem habitat school x income (1k)	0.0041 (0.0005)***
Robust Standard errors in parenthesis	
* p<0.10, ** p<0.05, *** p<0.01	

Table A3: Logit yearly willingness to pay estimates

Variable	Neighborhood	School		
	I=\$83,200	I=\$83,200	I=\$70,000	I=\$100,000
age	-\$18.87			
square feet	\$3.66			
baths	\$834.72			
lot size (acres)	\$714.25			
garage	\$1,024.30			
stories	-\$784.11			
distance to Baltimore City	-			
agricultural preserves	\$21.40	-\$148.64	-\$148.64	-\$148.64
agricultural land	\$10.01	-	-	-
industrial land	-	-	-	-
condo./apt. land	-\$8.23	-	-	-
commercial land	-	-	-	-
residential land	\$14.57	\$42.26	\$42.26	\$42.26
critical ecosystem habitat	\$6.91	\$2.15	\$1.81	\$2.59
adv. or prof. mat percent (3rd gr.)		\$6.35	\$2.74	\$10.94

Estimates taken at the point estimate(s) from Tables A1 and A2, with zeros for insignificant coefficients.

Dashes represent insignificant estimates.

Table A4: Logit welfare measures and demographic shifts

Critical Eco. Added	Measure	Partial Equilibrium	General Equilibrium
25%	Welfare Measure	3.03	4.78
	Change % Black Std. Dev.		0.05
	Change % Black Range		[-0.60, 0.91]
50%	Welfare Measure	6.98	9.81
	Change % Black Std. Dev.		0.09
	Change % Black Range		[-1.21, 0.88]
75%	Welfare Measure	12.13	18.21
	Change % Black Std. Dev.		0.14
	Change % Black Range		[-1.84, 0.52]

Welfare measures are dollars per household per year. All estimates utilized.