Online Appendix to:

Housing Markets and Residential Segregation: Impacts of the Michigan School Finance Reform on Inter- and Intra-district Sorting

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Table B1: Effect of Proposal A on Per Pupil Revenues

(Using Alternative Market definitions—Continued from Table 5)

	Market: District		Market: MSA		Market: County		Market: 20-mile	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Reform	455.3***	457.7***	423.2***	458.7***	455.3***	458.5***	426.3***	430.3***
	(28.8)	(27.3)	(33.2)	(34.6)	(27.8)	(27.0)	(23.3)	(22.5)
Reform * t	-39.3***	-34.3***	-30.0***	-32.4***	-39.3***	-34.1***	-36.6***	-34.7***
	(9.7)	(9.9)	(9.9)	(11.8)	(9.3)	(9.5)	(9.5)	(9.1)
Group 1 * Reform	-3.3	12.3	-92.2	-70.4	-4.7	8.8	11.8	25.2
	(47.7)	(45.0)	(73.5)	(52.8)	(46.0)	(42.1)	(51.4)	(43.1)
Group 2 * Reform	-5.8	15.7	-2.7	17.5	-5.8	11.4	14.7	37.4
	(39.6)	(50.3)	(47.5)	(63.9)	(38.2)	(47.6)	(33.0)	(44.3)
Group 4 * Reform	34.3	60.0	67.8	62.2	34.3	61.2	60.5	90.5**
	(44.9)	(40.4)	(51.4)	(45.3)	(43.3)	(39.5)	(43.3)	(37.0)
Group 5 * Reform	-240.7***††	-171.6***††	-164.4**	-140.2*	-240.7***††	-147.7***†	-278.3***†††	-166.0*†
	(67.0)	(70.6)	(75.2)	(78.2)	(64.6)	(72.1)	(79.8)	(89.6)
Group 1 * Reform * t	175.1***	161.8***	155.3***	160.0***	175.4***	160.9***	162.2***	156.5***
	(15.8)	(14.3)	(21.5)	(18.7)	(15.2)	(13.8)	(15.9)	(14.7)
Group 2 * Reform * t	69.8***	62.4***	53.3***	59.1***	69.8***	61.5***	65.2***	63.0***
	(14.3)	(17.1)	(17.6)	(21.7)	(13.8)	(16.2)	(13.8)	(15.9)
Group 4 * Reform * t	-16.7	13.4	-21.0	10.3	-16.7	9.4	-16.3	12.5
	(14.6)	(20.9)	(15.0)	(21.2)	(14.1)	(20.3)	(14.8)	(20.3)
Group 5 * Reform * t	-74.8***†††	-83.7***†††	-73.5***†††	-80.8***†††	-74.8***†††	-81.5***†††	-68.2***†††	-77.5***†††
	(21.6)	(19.0)	(20.9)	(20.1)	(20.8)	(18.5)	(25.1)	(22.0)
Observations	6288	6288	3540	3540	6286	6286	4908	4908
R²	0.95	0.96	0.81	0.76	0.85	0.82	0.85	0.80
Weighted	N	Y	N	Y	N	Y	N	Y

*, **, ***: significant at the 10, 5, and 1 percent level, respectively. †, ††, †††: Group 5 coefficient statistically different from corresponding Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include time trend, group dummies, interactions of time trend with group dummies, and market fixed effects. See specification (1) of text. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category.

Table B2: Effect of Proposal A on Per Pupil Housing Stock
(Using Alternative Market definitions—Continued from Table 6)

	Market: District		Market: 20-mile	
	(1)	(2)	(3)	(4)
Reform	-3675***	-4489***	-3524***	-3703***
	(425)	(448)		(436)
Reform * t	924***	956***	1003***	1099***
	(281)	(341)	(243)	(307)
Group 1 * Reform	1903***	2373***	1768**	1584*
	(698)	(781)	(745)	(952)
Group 2 * Reform	642	540	712	348
	(634)	(739)	(616)	(812)
Group 4 * Reform	-2318***	-3092***	-2449***	-3232***
	(888)	(1117)	(866)	(1015)
Group 5 * Reform	-14100***†††	-10461***†††	-11438***†††	-10691***†††
	(4331)	(1811)	(2021)	(2570)
Group 1 * Reform * t	1051***	457	765**	270
	(369)	(383)	(335)	(371)
Group 2 * Reform * t	291	-23	191	63
	(389)	(489)	(364)	(450)
Group 4 * Reform * t	-1106**	-273	-1188**	143
	(507)	(558)	(461)	(542)
Group 5 * Reform * t	-3363***†††	-1677*††	-2050***†††	-700
	(967)	(878)	(776)	(815)
Observations	6288	6288	4908	4908
R^2	0.96	0.97	0.49	0.47
Weighted	N	Y	N	Y

*, **, ***: significant at the 10, 5, and 1 percent level, respectively. †, ††, †††: Group 5 coefficient statistically different from corresponding Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include time trend, group dummies, interactions of time trend with group dummies, and market fixed effects. See specification (1) of text. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category.

Table B3: Effect of Proposal A on Housing, Income, and Educational Attainment, Michigan School Districts
(Using 20 Mile Radii Around CBSA Centroids as Alternative Markets—Continued from Tables 8 and 9)

Panel A	Percentage of Housing Units Occupied	Percentage of Housing Units Owner-Occupied	Median Gross Rent
	(1)	(2)	(3)
Reform * t	2.11***	3.05***	-25.10***
	(0.81)	(0.40)	(5.12)
Group 1 * Reform * t	5.36***	1.80**	7.49
	(1.74)	(0.85)	(8.32)
Group 2 * Reform * t	1.89*	1.08*	-5.43
	(1.12)	(0.57)	(7.09)
Group 4 * Reform * t	-1.89**	1.57*	-33.53***
	(0.86)	(0.89)	(8.37)
Group 5 * Reform * t	-0.39†††	0.97	-55.92***†††
	(0.93)	(0.78)	(8.03)
Observations	1222	1216	1224
R^2	0.47	0.31	0.82

Panel B	Median Household Income	Percentage of Households with PA Income	Civilian Unemployment Rate
	(1)	(2)	(3)
Reform * t	1454.94***	-8.12***	-3.34***
	(561.84)	(0.62)	(0.36)
Group 1 * Reform * t	2636.78**	-2.06**	-2.03***
	(1134.62)	(0.85)	(0.71)
Group 2 * Reform * t	497.26	-0.04	-0.19
	(684.43)	(1.11)	(0.70)
Group 4 * Reform * t	937.49	-7.50*	-3.71
	(1375.04)	(4.51)	(3.06)
Group 5 * Reform * t	-2271.29**†††	1.72†	0.80†††
	(919.56)	(1.75)	(0.87)
Observations	1222	1220	1222
R^2	0.62	0.48	0.41

Panel C	Percentage with less than 12th Grade	Percentage with at least some college	Percentage with at least a Bachelor's Degree
	(1)	(2)	(3)
Reform * t	3.19***	-8.07***	3.22***
	(0.44)	(0.67)	(0.35)
Group 1 * Reform * t	-0.44	2.27**	-0.26
	(0.65)	(1.08)	(0.64)
Group 2 * Reform * t	0.32	0.80	0.37
	(0.64)	(1.14)	(0.54)
Group 4 * Reform * t	0.79	-1.93*	-0.25
	(0.87)	(1.11)	(0.74)
Group 5 * Reform * t	0.50	-2.27**†††	1.77
	(0.59)	(0.88)	(1.53)
Observations	1217	1217	1217
R^2	0.55	0.59	0.45

*, **, ***: significant at the 10, 5, and 1 percent level, respectively. †, ††, †††: Group 5 coefficient statistically different from corresponding Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include a time trend, group dummies, interactions of group dummies with time trend, market fixed effects, and are weighted by the population of the school district. See specification (3) in the text. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category.

Table B4: Effect of Proposal A on Within-district Heterogeneity in Educational Attainment and Household Income
(Using Alternative Market Definitions—Continued from Table 11)

| Panel A | Household Income | | | |
| | Market: District | | Market: 20-mile | |
	(1)	(2)	(3)	(4)
Year 2000 Dummy	0.01***	0.01***	0.01***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)
Group 1 * Yr 2000	0.02***	0.01***	0.01***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Group 2 * Yr 2000	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Group 4 * Yr 2000	-0.00	0.01	-0.01***	-0.00
	(0.00)	(0.02)	(0.00)	(0.01)
Group 5 * Yr 2000	-0.00†††	-0.01†††	-0.01***†††	-0.00†††
	(0.01)	(0.01)	(0.00)	(0.01)
Observations	1046	1044	816	814
R^2	0.64	0.69	0.30	0.23
Weighted	N	Y	N	Y

| Panel B | Educational Attainment | | | |
| | Market: District | | Market: 20-mile | |
	(1)	(2)	(3)	(4)
Year 2000 Dummy	0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Group 1 * Yr 2000	0.00	0.01*	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.01)
Group 2 * Yr 2000	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Group 4 * Yr 2000	-0.00	0.00	0.01	0.01
	(0.00)	(0.00)	(0.01)	(0.01)
Group 5 * Yr 2000	-0.01**†††	-0.02**†††	-0.02***†††	-0.04***†††
	(0.00)	(0.01)	(0.01)	(0.01)
Observations	1046	1046	816	816
R^2	0.87	0.92	0.14	0.23
Weighted	N	Y	N	Y

The dependent variable is the measure of dispersion defined as one minus the Herfindahl index, see text for details. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category. The regressions in even numbered columns are weighted by the number of persons in the district in 1990. As noted in footnote 17, the income categories in the 1980 census were different from those in the 1990 and 2000 censuses (in terms of the ranges of the respective bins). Since use of the Herfindahl index-based measure of dispersion requires consistent categories (across years) for comparison, this precluded use of income data from the 1980 census in these calculations. So the intra-district analysis includes data from the 1990 and 2000 censuses only. The results for educational attainment are similar if we include data from the 1980 census. *, **, *** denote significance at the 10, 5, and 1 percent level, respectively. †, ††, †††: Group 5 coefficient statistically different from corresponding Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include market fixed effects.

Table B5: Effect of Proposal A on Housing, Income, and Educational Attainment, Ohio School Districts
(1980, 1990, and 2000 Censuses)

Panel A	Percentage of Housing Units Occupied			Median Gross Rent			Median Household Income		
	CBSA	20-mile	30-mile	CBSA	20-mile	30-mile	CBSA	20-mile	30-mile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Reform * t	-0.15	-0.12	-0.11	-20.47***	-18.72***	-18.57***	941**	971**	993**
	(0.34)	(0.33)	(0.33)	(6.57)	(6.42)	(6.41)	(463)	(452)	(449)
Group 1 * Reform * t	-0.13	0.07	0.01	7.28	9.75	8.68	951	1005	1097
	(0.55)	(0.54)	(0.52)	(9.23)	(8.80)	(8.59)	(722)	(668)	(748)
Group 2 * Reform * t	-0.57	-0.44	-0.63	13.42	15.42*	15.41*	445	820	823
	(0.50)	(0.48)	(0.50)	(8.28)	(8.16)	(7.97)	(613)	(618)	(601)
Group 4 * Reform * t	-0.49	-0.38	-0.38	-2.59	-3.76	-3.21	110	144	155
	(0.51)	(0.51)	(0.50)	(8.24)	(8.09)	(8.10)	(629)	(621)	(618)
Group 5 * Reform * t	-0.23	-0.26	-0.30	-10.98	-11.11	-10.73	-1013	-1161	-1179
	(0.50)	(0.50)	(0.50)	(9.18)	(9.30)	(9.29)	(711)	(725)	(731)
Observations	1613	1723	1794	1613	1723	1794	1613	1723	1794
R^2	0.22	0.23	0.23	0.76	0.78	0.78	0.58	0.61	0.61

Panel B	Percentage of Households with PA Income			Civilian Unemployment Rate			Percentage with less than 12th Grade		
	CBSA	20-mile	30-mile	CBSA	20-mile	30-mile	CBSA	20-mile	30-mile
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Reform * t	-4.80***	-4.85***	-4.88***	0.27	0.21	0.19	3.85***	3.82***	3.78***
	(0.48)	(0.47)	(0.47)	(0.25)	(0.25)	(0.25)	(0.30)	(0.30)	(0.30)
Group 1 * Reform * t	-0.49	-0.81	-0.81	-0.26	-0.52	-0.45	0.19	0.09	0.19
	(0.64)	(0.65)	(0.64)	(0.45)	(0.43)	(0.43)	(0.58)	(0.55)	(0.54)
Group 2 * Reform * t	-0.59	-1.28	-1.14	-0.35	-0.65	-0.47	0.44	-0.17	0.21
	(0.68)	(0.72)	(0.71)	(0.53)	(0.52)	(0.52)	(0.58)	(0.54)	(0.58)
Group 4 * Reform * t	-0.47	-0.66	-0.60	0.04	0.03	0.08	0.17	0.12	0.14
	(0.73)	(0.74)	(0.73)	(0.41)	(0.40)	(0.40)	(0.48)	(0.46)	(0.46)
Group 5 * Reform * t	-3.33***††	-3.23**†	-3.24**†	-1.09	-1.03	-1.03	0.82	0.90	0.89
	(1.26)	(1.30)	(1.29)	(0.68)	(0.68)	(0.68)	(0.76)	(0.79)	(0.80)
Observations	1613	1723	1794	1613	1723	1794	1613	1723	1794
R^2	0.39	0.41	0.43	0.36	0.39	0.40	0.41	0.44	0.46

*, **, ***: significant at the 10, 5, and 1 percent level, respectively. †, ††, †††: statistically different from Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include a time trend, Ohio group dummies, interactions of Ohio group dummies with time trend, market fixed effects, and are weighted by the population of the school district. See specification (3) in the text. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category.

Table B6: Effect of Proposal A on Housing, Income, and Educational Attainment in Michigan Relative to Ohio
(Using 20 Mile Radii Around CBSA Centroids as Alternative Markets—Continued from Table 12)

	Percentage of Housing Units Occupied (1)	Median Gross Rent (2)	Median Household Income (3)	Percentage with less than 12th Grade (4)
Reform * t	-0.12	-18.72***	970.52**	3.82***
	(0.33)	(6.43)	(452.21)	(0.30)
Reform * t * MI	2.23**	-6.37	484.42	-0.63
	(0.88)	(8.21)	(720.41)	(0.53)
Group 1 * Reform * t	0.07	9.75	1005.43	0.09
	(0.54)	(8.80)	(668.53)	(0.55)
Group 2 * Reform * t	-0.44	15.42*	819.72	-0.17
	(0.48)	(8.16)	(618.40)	(0.54)
Group 4 * Reform * t	-0.38	-3.76	143.85	0.12
	(0.51)	(8.10)	(621.68)	(0.46)
Group 5 * Reform * t	-0.26	-11.11	-1160.82	0.90
	(0.50)	(9.31)	(725.28)	(0.79)
Group 1 * Reform * t * MI	5.29***	-2.26	1631.35	-0.53
	(1.82)	(12.11)	(1314.60)	(0.85)
Group 2 * Reform * t * MI	2.33*	-20.86*	-322.46	0.50
	(1.22)	(10.85)	(931.66)	(0.84)
Group 4 * Reform * t * MI	-1.51†††	-29.77**††	793.64	0.67
	(1.00)	(11.64)	(1506.74)	(0.98)
Group 5 * Reform * t * MI	-0.14†††	-44.80***†††	-1110.47	-0.40
	(1.06)	(12.27)	(1110.57)	(0.98)
Observations	2945	2947	2945	2940
R^2	0.42	0.80	0.62	0.49

*, **, ***: significant at the 10, 5, and 1 percent level, respectively. †, ††, †††: statistically different from Group 1 coefficient at the 10, 5, and 1 percent level, respectively. Robust standard errors adjusted for clustering by district are in parentheses. All regressions include Michigan dummy, time trend, interaction of Michigan dummy with time trend, group dummies, interactions of group dummies with time trend, interactions of Michigan dummy with group dummies, interactions of Michigan dummy with group dummies and time trend, market fixed effects, and are weighted by the population of the school district. See specification (5) in the text. Group 3, the middle quintile of districts in the pre-reform spending distribution, is the omitted category.