

Do Neighborhoods Affect the Credit Market Decisions of Low-Income Borrowers? Evidence from the Moving to Opportunity Experiment¹

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Research Question:

- Does a better neighborhood environment improve financial credit decisions among low income households?

Empirical Approach:

- Link standard credit bureau reports of participants of the Moving to Opportunity (MTO) experiment.
- Link subprime credit (payday) reports of MTO participants.
- Follow up on decisions of both MTO adults and children into adulthood.

Why We Care

- Financial crisis highlighted large disparities in financial outcomes between high and low income neighborhoods.
 - Low income more likely to borrow at high interest rates repeatedly, use high-risk credit products like payday loans
- Little work on examining the effect of neighborhoods on credit outcomes of low income households.
 - Low income households have much higher rates of financial illiteracy, and studies find that low income borrowers respond to information disclosure interventions (Lusardi and Mitchell, 2007; Bertrand and Morse, 2011; Burke et al. 2016).
 - Studies have found causal impacts of peer effects on stock market and retirement investments.
 - Better neighborhoods may provide higher access to traditional credit.

Outline

1 Background

2 Data

3 Results

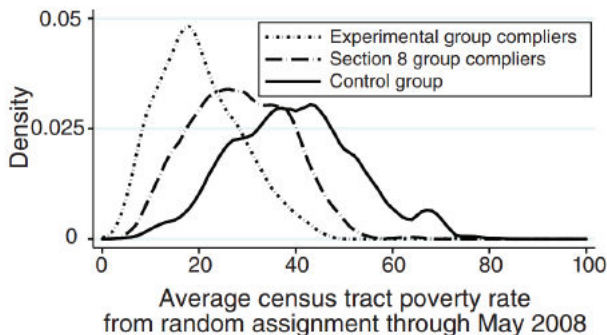
4 Channels of Neighborhood Effects

Moving to Opportunity Experiment

- MTO was a unique, large scale experiment that allocated housing vouchers by randomized lottery
 - Implemented by the Department of Housing and Urban Development (HUD) from 1994-1998
 - 4608 families across 5 cities: Baltimore, Boston, Chicago, Los Angeles, and New York.
- Families randomly assigned groups:
 - ① Experimental: housing vouchers that required move to low poverty (< 10%) neighborhoods
 - ② Section 8: standard housing voucher with no location restraint
 - ③ Control: currently residing in public housing in a high poverty census tract (> 40%)

Take up of Vouchers

- MTO experiment was successful in moving families into lower poverty neighborhood
- Section 8 group moved relative to control, Experimental group moved relative to Section 8



Ludwig et al. 2013

- MTO has been studied in a number of other contexts to examine economic, social, and physical well-being.
- Adults show improved physical health in short run, and mental and physical in long run (Ludwig et al. 2012)
- Find no impacts labor market outcomes for adults in short or long run.
- Most recently, Chetty et al. 2016 find substantial long run positive impacts on income and earnings for younger children.
- Prior MTO results are valuable in informing any effects we find on financial outcomes.

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- MTO data obtained from HUD:
 - 4,608 households, including adults and children
 - received 11,512 valid SSNs from HUD
- Link MTO data to credit data from 2001 to 2017
 - Double blind de-identified process matched via SSN
 - Approximately 95% of individuals matched to credit report data, 74% to alternative credit report data.
 - Baseline covariates balanced across treatment groups in matched data

Table: Balance Tests of Baseline Covariates

	Control Group Mean	Experimental	Section 8I
Household Head Completed High School	0.394	0.000375 (0.0259)	0.0280 (0.0314)
Household Head never married	0.690	-0.0313 (0.0248)	-0.00953 (0.0287)
Household Head Employed	0.268	-0.0117 (0.0231)	-0.0123 (0.0270)
Household Head gets AFDC/TANF	0.795	0.00899 (0.0175)	0.00560 (0.0186)
Household Head African American	0.707	-0.00904 (0.0178)	-0.0315* (0.0182)
Household Head Hispanic	0.270	0.00576	0.0214

Traditional Credit Data

- Credit bureau data comes from Experian, one of the 3 major credit bureau agencies.
- History of credit reports from 2001 to 2017, annual snapshot from June of each year
- Includes all information on credit reports including credit scores, loan amounts, payment histories, bankruptcies, and delinquencies
- All children are eligible to enter dataset by 2017.
- On average, observe adults for 11 years, children for 9 years, and younger children for 8 years.

Alternative Credit Data

- Obtain novel administrative dataset on subprime credit from a subsidiary of Experian: Clarity Services, Inc.
 - Credit agency that provides underwriting for alternative credit lenders, such as payday lenders, rent-to-own, auto financing.
 - Covers over 70 percent of subprime borrowers in the U.S.
- Only collects information from lenders who use their services.
- Online lenders overrepresented in the data, opportunity to extend analysis beyond physical storefront stores
- Data provided at loan level from 2014 to 2017, so have real time payment histories.
- Aggregate to the annual level for analysis.

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Channels of Neighborhood Impact on Credit

- Direct Effects of Neighborhood through Credit Demand
 - "Positive" peer effects through social learning or information diffusion
 - "Negative" peer effects through conformity or external habit formation ("keeping up with the Joneses")
 - Increased cost of living
- Direct Effects Of Neighborhood through Credit Supply
 - Physical proximity to traditional banking institutions and payday lenders
- Indirect Effects of Neighborhood through Income
 - Prior studies show that younger children in MTO treatment groups experience increased wages and earnings (Chetty et al. 2016).

- Baseline analysis where I_i is treatment group indicator:

$$Y_i = \beta_i + \beta_1 I_i + \beta_2 I_{site} + \epsilon_i \quad (1)$$

- Estimates intent-to-treat (ITT) effects of being *offered* a housing voucher.
- Estimate treatment-on-treated (TOT) effects, using actual voucher take up as instrument (2SLS).
 - Experimental takeup rates approximately 50% and Section 8 slightly lower across families

Multiple Hypothesis Testing

- Given number of tests examined in MTO, any post-hoc analysis may find significant effects given enough subgroups.
- Address in two ways:
 1. Compute one summary index per domain (credit, delinquency, payday)
 - Convert into z-scores and then average.
 - Summary index represents difference in treatment means from control group in standard deviations.
 2. Compute family wise error rate adjusted p-values.
 - P-values constructed via pairs bootstrap that clusters at the family level since random assignment occurred by family (Romano and Wolf, 2005).

MTO Effects: Summary

	All Participants	
	Exp (1)	Sec 8 (2)
Credit Index	0.051* (0.030)	0.022 (0.020)
Delinquency Index	-0.008 (0.012)	-0.025*** (0.006)
Payday Index	-0.003 (0.004)	-0.009** (0.005)
Observations	136,203	

Significance levels: *=10 percent; **=5 percent; ***=1 percent

MTO Effects: Summary

	All Participants		Adults		Older Children		Young Children	
	Exp (1)	Sec 8 (2)	Exp (3)	Sec 8 (4)	Exp (5)	Sec 8 (6)	Exp (7)	Sec 8 (8)
Credit Index	0.051* (0.030)	0.022 (0.020)	0.035 (0.051)	0.003 (0.012)	-0.047 (0.043)	-0.0138 (0.036)	0.082*** (0.025)	0.0348* (0.019)
Delinquency Index	-0.008 (0.012)	-0.025*** (0.006)	0.008 (0.021)	-0.033*** (0.011)	-0.010 (0.018)	-0.042*** (0.015)	-0.035* (0.018)	-0.009 (0.013)
Payday Index	-0.003 (0.004)	-0.009** (0.005)	-0.009 (0.023)	-0.008 (0.017)	-0.048 (0.033)	-0.001 (0.048)	0.001 (0.022)	-0.033*** (0.011)
Observations	136,203		63,410		25,942		46,851	

Significance levels: *=10 percent; **=5 percent; ***=1 percent

MTO Effects on Credit, Younger Children (<13 yrs)

	Credit Index (1)	Credit Score (2)	Credit Limit (3)	Total Balance (4)	Monthly Payment (5)	Credit Avail (6)
<i>Children: < 13 years at RA</i>						
Experimental v Control	0.082***† (0.025)	10.94**†◊ (4.913) [0.026]	821.1***† (318.670) [0.010]	4298** (1530.587) [0.005]	45.52** (19.718) [0.021]	659.1**†† (285.499) [0.021]
Section 8 v Control	0.035* (0.019)	-0.276 (4.152) [0.947]	366.0* (209.717) [0.081]	2270* (1371.696) [0.098]	26.37* (15.935) [0.098]	367.9* (204.453) [0.072]
Control Group Mean		495.6	1333	6742	120.2	828.7
Observations	46851	46851	46851	46851	46851	46851

- Younger children in Experimental credit card limits and balances 32% greater than control group.
- Monthly payments and credit availability nearly 40% greater.
- Significant w.r.t. average earnings of \$12k (Chetty et al. 2016)

MTO Effects on Credit, Older Children & Adults

	Credit Index (1)	Credit Score (2)	Credit Limit (3)	Total Balance (4)	Monthly Payment (5)	Credit Avail (6)
<i>Children: 13-17 at RA</i>						
Experimental v Control	-0.047 (0.043)	-11.19° (9.162) [0.222]	-687.2 (597.326) [0.250]	-1145 (3135.556) [0.715]	3.828 (31.409) [0.903]	-611.6 (464.506) [0.188]
Section 8 v Control	-0.014 (0.035)	6.462 (10.864) [0.552]	-67.34 (438.664) [0.878]	-2188 (3678.551) [0.552]	-20.60 (22.456) [0.359]	-221.6 (405.768) [0.585]
Control Group Mean		519.7	2315	14050	195.2	1567
Observations	25942	25942	25942	25942	25942	25942
<i>Adults at RA</i>						
Experimental v Control	0.034 (0.051)	-2.090 (5.118) [0.683]	993.6 (843.745) [0.239]	-1465 (3330.037) [0.660]	-2.855 (36.703) [0.938]	942.8 (878.085) [0.283]
Section 8 v Control	0.003 (0.012)	5.053 (3.873) [0.192]	544.2 (538.215) [0.312]	-3814 (3170.245) [0.229]	-20.31 (23.378) [0.385]	251.3 (232.595) [0.280]
Control Group Mean		558	4374	23001	310.8	3270
Observations	63410	63410	63410	63410	63410	63410

Significance levels: *=10 percent; **=5 percent; ***=1 percent

MTO Effects on Delinquency, Adults

	Delinquency Index (1)	30 Days Past Due (2)	Tax Liens (3)	Judgment Amount (4)	Collections (5)
<i>Panel C: Adults at RA</i>					
Experimental v Control	0.008 (0.021)	-177.9 (253.589) [0.483]	165.9 (131.748) [0.208]	-400.5 (417.971) [0.338]	224.2 (244.911) [0.360]
Section 8 v Control	-0.033*** (0.011)	-333.4** (149.724) [0.026]	-101.0* (55.931) [0.071]	-279.5* (153.677) [0.069]	0.472 (94.146) [0.996]
Control Group Mean		944.4	151.9	671.4	1915
Observations	63410	63410	63410	41661	63410

Significance levels: *=10 percent; **=5 percent; ***=1 percent

- S8 Adults hold 23% less debt overdue, 66% less tax debts, 27% less court judgments than the control group.
- Significant relative to average earnings of \$14k.

MTO Effects on Delinquency, Younger & Older Children

	Delinquency Index (1)	30 Days Past Due (2)	Tax Liens (3)	Judgment Amount (4)	Collections (5)
<i>Panel A: Age < 13 years at RA</i>					
Experimental v Control	-0.035* ^o (0.018)	67.13 (88.663) [0.449]	-241.5 ^{oo} (243.328) [0.321]	-12.08 (123.367) [0.922]	-425.6 (428.822) [0.321]
Section 8 v Control	-0.009 (0.013)	176.9 (245.942) [0.472]	-128.4 (178.513) [0.472]	104.5 [†] (173.503) [0.547]	-246.5 (216.989) [0.256]
Control Group Mean		447.5	143.8	216.5	1775
Observations	46851	46851	46851	42654	46851
<i>Panel B: Ages 13-17 years at RA</i>					
Experimental v Control	-0.0101 (0.584)	-123.5 (0.677) [0.677]	-52.40 (0.526) [0.526]	-208.3 (0.558) [0.782]	142.9 (0.431) [0.782]
Section 8 v Control	-0.0417*** (0.006)	-399.0 (0.108) [0.192]	-42.90 (0.145) [0.145]	-456.9 (0.115) [0.146]	-231.9 (0.417) [0.417]
Control Group Mean					
Observations	25942	25942	25942	18206	25942

MTO Effects on Payday Borrowing, Younger Children

	Payday Index (1)	Payday Amt (2)	Internet Amt (3)	Storefront Amt (4)	Payday Inquiries (5)
<i>Children: < 13 years at RA</i>					
Experimental v Control	0.001 ^o (0.022)	-3.306 (9.053) [0.715]	2.279 (4.506) [0.613]	-5.585 (14.648) [0.703]	0.0191 (0.026) [0.455]
Section 8 v Control	-0.033*** (0.011)	-16.17***† (6.095) [0.008]	-5.473** (2.271) [0.016]	-10.69** (5.230) [0.041]	0.00281 (0.014) [0.846]
Control Group Mean	22.11	9.946	12.17	0.0857	
Observations	23204	23204	23204	23204	23204

- S8 Younger children borrow 50% less in payday loans, 30% less online, 60% less at physical stores.

MTO Effects on Payday Borrowing, Older Children & Adults

	Payday Index (1)	Payday Amt (2)	Internet Amt (3)	Storefront Amt (4)	Payday Inquiries (5)
<i>Children: 13-17 years at RA</i>					
Experimental v Control	-0.048 (0.126)	-12.91 (75.368)	-17.62* (10.679)	4.713 (13.346)	-0.0357 (2.589)
		[0.525]	[0.152]	[0.683]	[0.313]
Section 8 v Control	-0.001 (0.001)	9.231 (368.210)	-4.570 (31.321)	13.80 (62.772)	-0.0509 (0.349)
		[0.553]	[0.765]	[0.281]	[0.265]
Control Group Mean	19.93	17.13	2.803	0.146	
Observations	7716	7716	7716	7716	7716
<i>Adults: 18+ at RA</i>					
Experimental v Control	-0.009 (0.006)	-1.723 (2.710)	-5.636 (3.934)	3.913 (9.581)	-0.00129 (0.001)
		[0.864]	[0.099]	[0.724]	[0.989]
Section 8 v Control	-0.008 (0.328)	-0.000654 (0.001)	-1.360 (4.549)	1.359 (1.260)	-0.0285 (0.026)
		[0.989]	[0.884]	[0.826]	[0.884]
Control Group Mean	14.58	7.077	7.503	0.105	
Observations	17628	17628	17628	17628	17628

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Exploring Channels of Neighborhood Effects

- We find MTO has benefits for credit, delinquency, and payday usage – but differentially across subgroups.

What we do:

- Employ a 4 million random sample of Experian credit reports to derive zip code level borrowing and delinquency behavior.
- Attain data from the Census Business Patterns to derive the number of banks and lending institutions and number of payday storefronts.
- Match zip codes of MTO participants from history of credit reports, 2001 to 2017.

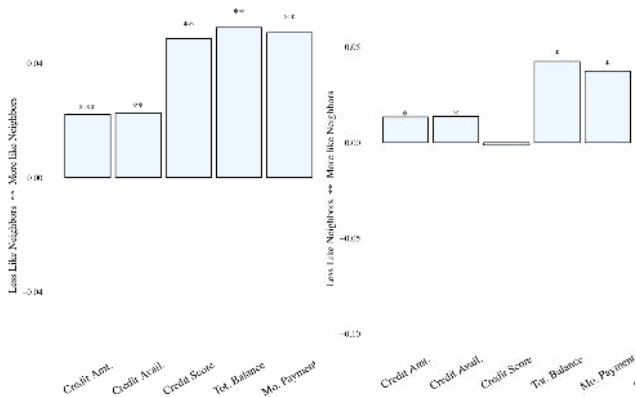
Direct Neighborhood Effects, Younger Children

	Peer Index		Cost of Living		Credit Supply	
	Credit (1)	Delinquency (2)	CC Spending (3)	Utilization (4)	Payday Stores (5)	Banks (6)
<i>Children: Age < 13 years at RA</i>						
Experimental v Control	0.159*** [0.000]	0.00349 [0.861]	425.3*** [0.000]	-0.198 [0.216]	0.0142 [0.851]	0.380 [0.112]
Section 8 v Control	0.0999*** [0.000]	-0.00736 [0.693]	239.3*** [0.000]	-0.521*** [0.001]	-0.164** [0.006]	-0.0963 [0.616]
Control Group Mean	0.0502	0.0708	1.902	58.54	5.155	2632
Observations	41615	41615	41615	41615	46851	46851

- We find neighborhood peers of younger MTO children have better access and greater use of mainstream credit products.
- We further examine whether MTO children actually behave more like their peers.

Peer Convergence: Younger

- Re-scale estimates by the difference between the neighbor peers and control group.
- Only find consistent evidence of convergence among younger MTO children, of no more than 5 percent.



Direct Neighborhood Effects, Older Children & Adults

- We find that adults and older children in the *Section 8* treatment group experience lower debts and delinquencies.
- Interestingly, we do not find these benefits for adults and older children in the Experimental group.
- We know from prior studies these groups did not experience any increases in income.
- Thus the only difference between these treatment groups are the voucher location restraint.

Direct Neighborhood Effects, Older Children & Adults

	Peer Index		Cost of Living		Credit Supply	
	Credit (1)	Delinquency (2)	CC Spending (3)	Utilization (4)	Payday Stores (5)	Banks (6)
<i>Children: Ages 13-17 years at RA</i>						
Experimental v Control	0.0763* [0.047]	-0.0150 [0.640]	194.7* [0.047]	0.074 [0.886]	0.0763 [0.474]	0.352 [0.209]
Section 8 v Control	0.0537 [0.126]	-0.0334 [0.286]	76.60 [0.280]	-0.132 [0.743]	0.0314 [0.655]	0.131 [0.602]
Control Group Mean	0.0228	-0.0517	1.399	57.95	3.910	2790
Observations	24216	24216	24216	24216	25942	25942
<i>Adults: 18+ at RA</i>						
Experimental v Control	0.156*** [0.000]	0.00615 [0.699]	380.9*** [0.000]	0.165 [0.601]	0.0647 [0.219]	-0.0156 [0.919]
Section 8 v Control	0.0686*** [0.000]	-0.0162 [0.158]	181.9*** [0.000]	-0.437* [0.075]	-0.0367 [0.372]	0.219 [0.151]
Control Group Mean	-0.0273	-0.104	1.326	58.06	3.540	2715
Observations	59542	59542	59542	59542	63410	63410

Direct Neighborhood Effects, Younger Children

	<u>Peer Index</u>		<u>Cost of Living</u>		<u>Credit Supply</u>	
	Credit (1)	Delinquency (2)	CC Spending (3)	Utilization (4)	Payday Stores (5)	Banks (6)
<i>Children: Age < 13 years at RA</i>						
Experimental v Control	0.159*** [0.000]	0.00349 [0.861]	425.3*** [0.000]	-0.198 [0.216]	0.0142 [0.851]	0.380 [0.112]
Section 8 v Control	0.0999*** [0.000]	-0.00736 [0.693]	239.3*** [0.000]	-0.521*** [0.001]	-0.164** [0.006]	-0.0963 [0.616]
Control Group Mean	0.0502	0.0708	1.902	58.54	5.155	2632
Observations	41615	41615	41615	41615	46851	46851

- We find only younger children in the S8 group moved to neighborhoods with fewer payday stores.
- We also find only younger children in the S8 group lower their payday usage significantly.

Indirect Effects of Neighborhood through Income

- Prior studies show that younger MTO children experience increased earnings.
- We also find the largest impacts on credit score and use in this group.
- Chetty et al. 2016 find that younger children within the Experimental group experience \$3,447 more in earnings.
- Cookson et al. 2019 estimate a \$5k-\$20k income increase results in a 4-7 point credit score increase for subprime, low income borrowers.
- We estimate approximately an 11 point increase in credit scores.
- Attributes approximately half of our impact to changes in income.

Discussion/Policy Implications

- We find the greatest impacts on credit access and use among children with the longest exposure to the lowest poverty neighborhoods.
- We attribute approximately half of our estimated impacts to income.
- In contrast to prior studies, we find positive impacts for adults across debts and delinquencies.
- Interestingly, we only find these benefits for those who were allowed to choose their neighborhood.
- We know from prior studies that adults did not experience any increases in income, so differences must be driven by the voucher location restraint (cost of living, loss of informal lending networks).

Discussion/Policy Implications

- Because this is the first study to find any economic benefit to adults in MTO, policy proposals on moving to opportunity have been entirely focused on benefits to children.
- Consequently, any cost-benefit analysis of moving families has only accounted for benefits to children.
- Our results suggest that there are important costs and benefits among adults we must acknowledge.
- Our results also highlight that despite improved repayment behaviors, it remains difficult to build credit without improved labor market earnings.