Humanitarian Aid and Civil War

Quasi-Experimental Evidence from Syrian Refugees in Lebanon *

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Online Appendix

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1 Schematic of the Cash-Grant Program

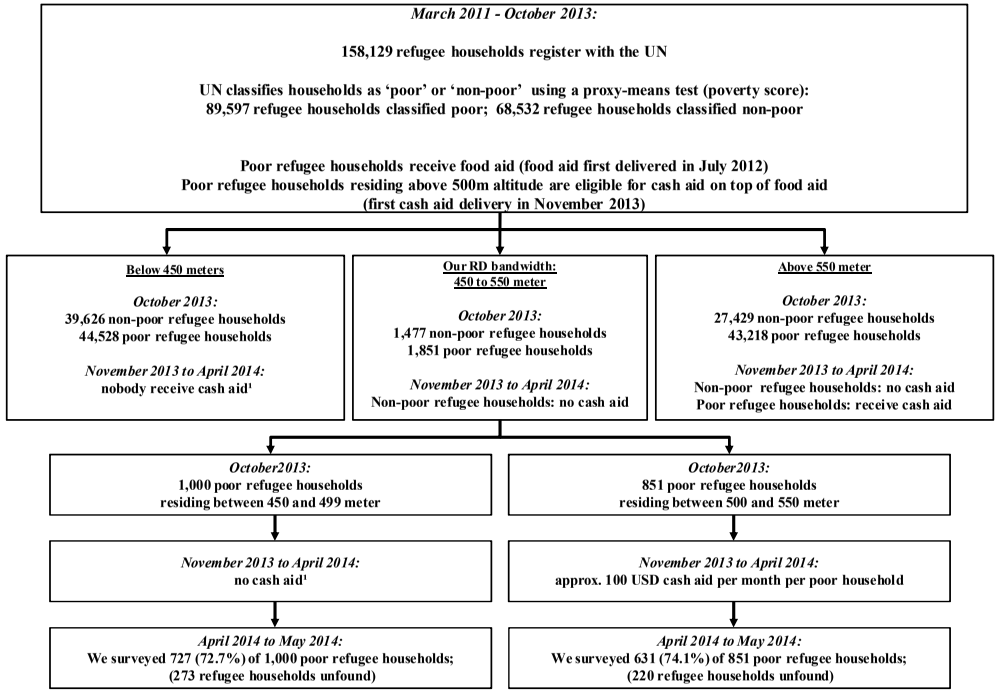

Figure A.1: The Cash Assistance Program: The Step-by-Step Treatment Assignment Mechanism

2 Internal Validity

2.1 Contamination of the Control Group

Although many other aid programs were serving Syrians during the period of study, we find little evidence of other aid programs delivered discontinuously around the 500-meter altitude threshold. Although numerous conversations with aid agencies revealed no other aid program that used a 500-meter altitude eligibility cutoff for any program (one of the authors lived in Lebanon during the period of study), regression estimates weakly suggest that aid agencies may have 'compensated' the control group with additional aid.

Table A.1: Results, Other Aid Programs

	Linear		Quadratic		Control-Group Mean
$\hat{\beta}$: Received Other Aid (yes=1, no=0)	-0.18	-0.18	-0.03	-0.04	0.29
	(0.1)	(0.1)	(0.11)	(0.11)	
p-value	0.074	0.075	0.791	0.743	
$\hat{\beta}$: Total Value of Other Aid (USD)	-24.95	-20.92	-21.62	-15.99	21.46
	(17.1)	(20.23)	(16.66)	(20.88)	
p-value	0.145	0.301	0.195	0.444	
Covariates	No	Yes	No	Yes	

Notes: *n = 1,358*. The bandwidth in all regressions is h = 50 meters. The control-group mean column shows the regression model's prediction of the dependent variable (linear polynomial) for refugees residing at 499 meters altitude. Covariates include baseline household demographics (number of children, adults, elderly), education, age, and Syria origin of household head. Conventional Eicker-Huber-White robust standard errors (clustered at the community level), are reported in parentheses.

In addition to all poor households living at or above 500 meters altitude, Syrians living in so-called *informal tended settlements* (ITSs) and *informal settlements* (ISs) also received the cash transfer program regardless of altitude. The vast majority of ISs are in the Biqaʿa around 1,000 meters altitudes or at sea level in the north, especially around Tripoli and in Akkar. Only 16 households in our full sample were in ISs at the time of treatment assignment. UNHCR was able to tell us *how many* households in our full sample were in an IS, but not *which ones*, so we cannot state how many of these 16 should, according to the RD, be in the treatment or control group.

If a family moved from above 500 meters altitude to below after the program began, they were not removed from the program. If a poor family moved from below 500 meters to above (and they notified the UN of their move), they would become eligible for the remainder of the program. These individuals remain classified as the control group. This control-group spillover reduces our ability to identify effects. However, this is not major concern for identification because the number of control-into-treatment movers is so small. Only 49 households in our sample moved, and only 36 moved to a different altitude. Looking at movement from one side of our treatment decision rule (that is, altitude $\geq$ 500 meters) to the other, we see no systematic sorting into the treatment or control groups. Both these facts suggest

that moving is not a concern for contamination.

In table A.2 the first (second) column shows the number of movers by pre-intervention treatment status that lived below (above) 500 meters altitude when the program ended, that is, living in control-group (treatment-group) villages.

Table A.2: Movers between experimental groups pre-program and post-program ($n = 1{,}358$)

	$Alt_i^{post} < 500$	$Alt_i^{post} \geq 500$
C_{pre}	9	11
T_{pre}	9	20

Although interference and spillover could be concerns, we have survey data to mitigate this concern. Figure **??** shows that treatment and control villages are geographically close to each other. Spillover might be a problem if (a) treatment households more frequently made material contributions to control group households (effectively sharing their cash aid) or (b) the cash aid program had significant effects on the economies in control-group villages below 500-meters altitude. First, we asked all respondents about whether they gave monetary or in-kind gifts or loans to other Syrians. We asked how much money respondents gave in total to people who do not live in their household since November. We also asked whether the people in the household had helped other Syrians in Lebanon by giving them money, shelter, or

food. As is clear in table A.3, the results do not support concerns about spillover.

Regarding whether the program might have had spillover impacts by affecting the overall Lebanese economy, a crude estimate of the first-round additional income generated by the cash program is thus 87,700 x $575 = $51 million, which is only a 0.1% shock to Lebanon's GDP of approximately $43.35 billion (2013 World Bank estimate). Although we cannot formally test the proposition, we believe it is unlikely that the program had spillover effects on neighboring control-group village economies sufficient to impact Syrian refugees living in those areas.

Table A.3: Results, Sharing and Spillover

	Linear		Quadratic		Control-Group Mean
$\hat{\beta}$: Gave Money to Non-HH Members (yes=1, no=0)	-0.01	-0.01	0.03	0.03	0.03
	(0.03)	(0.04)	(0.04)	(0.04)	
p-value	0.817	0.77	0.422	0.387	
$\hat{\beta}$: Helped Other Syrians (yes=1, no=0)	-0.05	-0.04	-0.04	-0.03	0.14
	(0.07)	(0.07)	(0.08)	(0.08)	
p-value	0.45	0.511	0.645	0.671	
Covariates	No	Yes	No	Yes	

Notes: *n = 1,358.* The bandwidth in all regressions is h = 50 meters. Column (5) shows the regression model's prediction of the dependent variable (linear polynomial) for refugees residing at 499 meters altitude. Covariates include baseline household demographics (number of children, adults, elderly), education, age, and Syria origin of household head. Conventional Eicker-Huber-White robust standard errors (clustered at the community level), are reported in parentheses.

3 Dependent Variables Studied

3.1 List of All Outcomes Studied

Table A.4: Outcomes Studied

Outcome Variables (Treatment is the cash-transfer program)

Outcome variables in the main paper

1. The change in the number of men ages 18 to 50 in each household over the course of the program (November 2013 to April 2014)
2. Whether someone in the household returned to Syria between November 2013 and April 2014
3. Interaction of change in men ages 18 to 50 [item 1] and went back to Syria [item 2])
4. A family member is living in an active war zone in Syria
5. Whether a household had someone return to Syria and has a family member living under siege (Interaction of items 2 and 4)

Outcome variables in the appendix only

1. Number of men ages 18 to 50 in household
2. Did anyone in the HH undertake physically dangerous activities to earn money in the last 30 days?
3. Has anyone in the HH returned to Syria to make money since the beginning of the cash program?
4. Did the HH receive any monetary transfers from individuals in Syria since the beginning of the cash program?
5. Interaction of the change in the number of men 18-50 and whether anyone returned to an active war zone

3.2 Main-Paper Outcomes: Variable Construction and Full Text of Survey Questions

Below we describe our outcome metrics, including the wording of survey questions and how outcomes were coded. The variable numbers below correspond to the variable numbers in the top section of Table A.4, labeled *Outcome variables in the main paper*.

1. The change in the number of men ages 18 to 50 in each household over the course of the program (November 2013 to April 2014)

Baseline data on sex and age of household members is drawn from UNHCR records. UNHCR data includes the sex and age of each household member. Endline data on sex and age of household members is drawn from the survey household roster. Each survey began with a household roster of all residents, which was defined for the respondent as "all the people who sleep under this roof most nights and share meals with you." The roster recorded each resident's sex and year of birth. Approximate age was calculated from the year of birth. With this individual-level information about the residents' sex and age we could calculated the number of men within the age range, and then calculated the change by subtracting baseline from endline.

Any bias due to differential measurement between baseline and endline will be constant across treatment and control groups by nature of the research design.

2. Whether someone in the household returned to Syria between November 2013 and April 2014

Binary coding of survey question 64. "How many household members went back to Syria?" Null results are robust to continuous coding.

3. Interaction of change in men ages 18 to 50 [item 1] and went back to Syria [item 2])

Interaction of questions 1 and 2.

4. A family member is living in an active war zone in Syria

Question 66.B.1 "Do you have family members living in a part of Syria that is under siege or where there is currently fighting?"

5. Whether a household had someone return to Syria and has a family member living under siege.

Interaction of questions 2 and 4.

3.3 Appendix-Only Outcomes: Variable Construction and Full Text of Survey Questions Studied

The variable numbers below correspond to the variable numbers in the bottom section of Table A.4, labeled *Outcome variables in the appendix only.*

1. Number of men ages 18 to 50 in household

The simple count from the household roster.

2. Did anyone in the HH undertake physically dangerous activities to earn money in the last 30 days?

Page 18: "During the last month, did your household have to do any of the following things because there was not enough money to buy essentials for living? For these questions we want to know about the last 30 days." $\Rightarrow$ Question 89. "Accepted undertaking risky activities that you would not do if you had enough money. (Yes/No)"

3. Has anyone in the HH returned to Syria to make money since the beginning of the cash program?

Question 91A.1 "Since November, have any members of the household gone back to Syria to earn money?"

4. Did the HH receive any monetary transfers from individuals in Syria since the beginning of the cash program?

Binary coding of question 51.1 "Since November, how much money did your household receive from family members, neighbors, or friends in Syria?" Results are robust to continuous coding.

5. Interaction of the change in the number of men 18-50 and whether anyone returned to an active war zone

Interaction of the change variable described in question 1 in Section 3.2 and question 91A.3 from the survey. Question 91A.1 asked "Since November, have any members of the household gone back to Syria to earn money?" If the respondent answered yes, question 91.A.3 asked "Are these household members living in a part of Syria that is under siege or where there is currently fighting?"

4 Empirical Analysis and Additional Results

Tables A.6, A.7, and A.8 show that the general findings in the main paper are robust to model specification and different outcome variables. Table A.6 shows the results for the same outcomes presented in the main paper, but across linear and quadratic models with and without covariates. Table A.7 presents results across a number of additional outcomes not presented in the main paper. Table A.8 shows results after the other outcomes are dimension-reduced using principal-component analysis. The loadings on the principal components suggests that the first captures variation in men returning to siege zones, the second captures variation in men returning to Syria for money, and the third outcome is the mean of the remaining six principal components.

4.1 Descriptive Statistics on Mobilization

Table A.5: Control-Group Descriptive Statistics on Mobilization for Nov. 2013 to April 2014 period ($n_C = 727$)

Outcome	Mean	Median	SD	Range
At least one person returned to Syria (yes=1, no=0)	0.067	0	0.25	0–1
Someone moved to Syria for money (yes=1, no=0)	0.014	0	0.12	0–1
Number of returnees	0.107	0	0.54	0–10
Among HHs with a return, change in number of men aged 18 to 50	0.011	0	0.15	-1–3
Number of men aged 18 to 50	1.003	1	0.63	0–5
Dangerous work (yes=1, no=0)	0.116	0	0.32	0–1
Under siege (yes=1, no=0)	0.238	0	0.43	0–1
Remittances from Syria (yes=1, no=0)	0.01	0	0.1	0–1

4.2 Full Results for Outcomes Presented in Main Paper

Table A.6: Full Results for Outcomes Presented in Main Paper

	Linear		Quadratic		Control-Group Mean
$\hat{\beta}$: Δ men 18-50	-0.071	-0.003	-0.095	0.014	0.173
	(0.077)	(0.068)	(0.081)	(0.063)	
p-value	0.357	0.969	0.242	0.828	
Standarized $\hat{\beta}$	0.113	0.005	0.151	0.022	
Standardized 95% CI range	0.481	0.425	0.506	0.394	
$\hat{\beta}$: HH member returned to Syria	-0.04	-0.032	0.008	0.023	0.067
	(0.03)	(0.034)	(0.03)	(0.03)	
p-value	0.188	0.34	0.791	0.446	
Standarized $\hat{\beta}$	0.176	0.141	0.035	0.101	
Standardized 95% CI range	0.518	0.587	0.518	0.518	
$\hat{\beta}$: (Δ men 18-50 x returned to Syria)	-0.012	-0.001	0.005	0.02	0.011
	(0.016)	(0.018)	(0.017)	(0.021)	
p-value	0.459	0.974	0.77	0.343	
Standarized $\hat{\beta}$	0.087	0.007	0.036	0.145	
Standardized 95% CI range	0.454	0.51	0.482	0.596	
$\hat{\beta}$: Family member under siege (yes=1, no=0)	-0.123	-0.118	-0.033	-0.032	0.238
	(0.112)	(0.119)	(0.121)	(0.136)	
p-value	0.27	0.319	0.783	0.816	
Standarized $\hat{\beta}$	0.297	0.285	0.08	0.077	
Standardized 95% CI range	1.062	1.128	1.147	1.289	
$\hat{\beta}$: (Returned x under siege)	-0.07	-0.066	-0.059	-0.053	0.043
	(0.026)	(0.028)	(0.027)	(0.027)	
p-value	0.007	0.02	0.026	0.053	
Standarized $\hat{\beta}$	0.395	0.373	0.333	0.299	
Standardized 95% CI range	0.575	0.62	0.598	0.598	
Covariates	No	Yes	No	Yes	

Notes: *n = 1,358*. The bandwidth in all regressions is h = 50 meters. Column (5) shows the regression model's prediction of the dependent variable (linear polynomial) for refugees residing at 499 meters altitude. Covariates include baseline household demographics (number of children, adults, elderly), education, age, and Syria origin of household head. Eicker-Huber-White robust standard errors (clustered at the community level) are reported in parentheses.

4.3 Full Results for Outcomes Not Presented in Main Paper

Table A.7: Full Results for Outcomes Not Presented in Main Paper

	Linear		Quadratic		Control-Group Mean
$\hat{\beta}$: Sum men ages 18 to 50	0.078	-0.014	0.082	-0.009	1.003
	(0.083)	(0.08)	(0.087)	(0.076)	
p-value	0.344	0.857	0.348	0.903	
Standarized $\hat{\beta}$	0.124	0.023	0.13	0.015	
Standardized 95% CI range	0.513	0.496	0.541	0.469	
$\hat{\beta}$: Dangerous work (yes=1, no=0)	-0.124	-0.126	-0.075	-0.068	0.116
	(0.043)	(0.05)	(0.052)	(0.056)	
p-value	0.004	0.012	0.15	0.222	
Standarized $\hat{\beta}$	0.441	0.446	0.267	0.243	
Standardized 95% CI range	0.602	0.696	0.727	0.779	
$\hat{\beta}$: Went back to syria for money (yes=1, no=0)	-0.008	-0.008	-0.019	-0.014	0.014
	(0.02)	(0.018)	(0.019)	(0.017)	
p-value	0.67	0.662	0.321	0.428	
Standarized $\hat{\beta}$	0.078	0.072	0.175	0.127	
Standardized 95% CI range	0.718	0.646	0.691	0.626	
$\hat{\beta}$: Money from Syria (yes=1, no=0)	0.015	0.016	0.014	0.013	0.01
	(0.007)	(0.01)	(0.008)	(0.008)	
p-value	0.038	0.136	0.105	0.105	
Standarized $\hat{\beta}$	0.158	0.166	0.146	0.143	
Standardized 95% CI range	0.297	0.436	0.352	0.347	
$\hat{\beta}$: Δ men among HHs with a return to a war zone	-0.01	-1e-04	-0.04	-0.019	0.03
	(0.016)	(0.017)	(0.02)	(0.024)	
p-value	0.526	0.995	0.045	0.428	
Standarized $\hat{\beta}$	0.05	0.001	0.194	0.092	
Standardized 95% CI range	0.309	0.319	0.378	0.453	
Covariates	No	Yes	No	Yes	

Notes: *n = 1,358.* The bandwidth in all regressions is h = 50 meters. Column (5) shows the regression model's prediction of the dependent variable (linear polynomial) for refugees residing at 499 meters altitude. Covariates include baseline household demographics (number of children, adults, elderly), education, age, and Syria origin of household head. Eicker-Huber-White robust standard errors (clustered at the community level) are reported in parentheses.

4.4 Results for PCA of Outcomes

Table A.8: Results for PCA of Outcomes

	Linear		Quadratic		Control-Group Mean
$\hat{\beta}$: PCA dim. 1	-0.571	-0.508	-0.278	-0.17	25.52
	(0.242)	(0.282)	(0.239)	(0.269)	
p-value	0.018	0.072	0.245	0.528	
$\hat{\beta}$: PCA dim. 2	0.008	0.112	-0.069	0.106	15.98
	(0.165)	(0.139)	(0.162)	(0.146)	
p-value	0.962	0.417	0.672	0.467	
$\hat{\beta}$: PCA dims. 3-8	-0.066	-0.081	-0.063	-0.075	58.49
	(0.067)	(0.073)	(0.074)	(0.073)	
p-value	0.319	0.272	0.394	0.306	
Controls	No	Yes	No	Yes	

Notes: *n = 1,358*. The bandwidth in all regressions is h = 50 meters. Column (5) shows the regression model's prediction of the dependent variable (linear polynomial) for refugees residing at 499 meters altitude. Covariates include baseline household demographics (number of children, adults, elderly), education, age, and Syria origin of household head. Eicker-Huber-White robust standard errors (clustered at the community level) are reported in parentheses.

5 Balance variables

1. Age between 0 –> 2 not disabled
2. Age between 3 –> 4 not disabled
3. Age between 5 –> 12 not disabled
4. Age between 13 –> 15 not disabled
5. Age between 16 –> 17 not disabled
6. Age between 60 –> 70 not disabled
7. Age between 70 –> more not disabled
8. Age between 18 –> 50 Male not disabled

9. Age between 18 –> 50 Female not disabled
10. Age between 51 –> 59 Male not disabled
11. Age between 51 –> 59 Female not disabled
12. Age between 0 –> 2 disabled
13. Age between 3 –> 4 disabled
14. Age between 5 –> 12 disabled
15. Age between 13 –> 15 disabled
16. Age between 16 –> 17 disabled
17. Age between 60 –> 70 disabled
18. Age between 70 –> above, disabled
19. Age between 18 –> 50 Male disabled
20. Age between 18 –> 50 Female disabled
21. Male disabled
22. Female disabled
23. Primary respondent age
24. Are you from the city or the country?
25. Did anyone in the HH have family in Lebanon before you came?
26. Pre-treatment Syrian population of town where respondent lived
27. What year did the household head arrive in Lebanon?

— Which month did the household head arrive in Lebanon?

28. January

29. February
30. March
31. April
32. May
33. June
34. July
35. August
36. September
37. October
38. November
39. December

— What is the level of education of the household head?

40. Never studied
41. Incomplete primary school
42. Finished primary school
43. Finished middle school
44. Finished secondary school
45. Technical school
46. University

— Which governorate in Syria are you from?

47. Damascus

48. Reef Damascus
49. Qonaitara
50. Darʿa
51. Suweida
52. Homs
53. Tartous
54. Laziqiyya
55. Hama
56. Idleb
57. Aleppo
58. Raqaʿa
59. Deir el Zoor
60. Hasakeh

References

Gerber, Alan S and Donald P Green. 2012. *Field Experiments: Design, Analysis, and Interpretation.* New York: Norton.

McCrary, Justin. 2008. "Manipulation of the running variable in the regression discontinuity design: A density test." *Journal of Econometrics* 142(2):698–714.