

****NOT FOR PUBLICATION****

Supplementary Online Appendices

Class, Ethnicity, and Cooperation among Women:
Evidence from a Public Goods Experiment in Lebanon

Appendices

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A Experimental Design

A.1 Main Study

The public goods experiment featured in this paper was played as part of the baseline data collection for a separate study on the effects of political discussion in homogeneous versus heterogeneous class and sectarian groups on support for ethnic versus programmatic politics. This main experiment was pre-registered with the Evidence in Governance and Politics (EGAP) network.¹ The strategy for recruitment and randomization described below was driven by the needs for this main study (e.g. the fact that we have more men than women in the study, despite our focus on women’s cooperation). The analysis in this paper focuses on the *class* composition treatments although we do some additional analysis with the cross-cutting *sectarian* composition treatments and therefore describe the complete experimental design below.

A.2 Randomization

We organized 120 discussion groups in the Beirut and Mount Lebanon areas in the spring of 2016. Individuals with different sectarian (Christian, Sunni, and Shia) and economic (lower and upper income) profiles were randomly assigned to participate in discussions that varied in their class and sectarian compositions. Assignment to the two treatments was orthogonal following a 2x2 factorial design with 30 groups in each cell. Specifically, participants were randomly assigned to one of four discussion group types: (1) homogeneous sect and class, (2) mixed sect, homogeneous class, (3) homogeneous sect, mixed class, and (4) mixed sect and class. All discussions were same-gender.

		Same-sect	Mixed-sect
		<u>Group Type 1</u>	<u>Group Type 2</u>
Same-class	<i>n</i> :	180 in 30 groups	180 in 30 groups
	<i>sect comp</i> :	6 Chr, 6 Sun, or 6 Shi	2 Chr, 2 Sun, and 2 Shi
	<i>class comp</i> :	All poor or all rich	All poor or all rich
		<u>Group Type 3</u>	<u>Group Type 4</u>
Mixed-class	<i>n</i> :	180 in 30 groups	180 in 30 groups
	<i>sect comp</i> :	6 Chr, 6 Sun, or 6 Shi	2 Chr, 2 Sun, and 2 Shi
	<i>class comp</i> :	3 poor and 3 rich	3 poor and 3 rich (1 each/sect)

Table A.1: Summary of randomization

In homogeneous sectarian groups all six participants were either Christian, Sunni, or Shia. In mixed sectarian groups, two participants were Christian, two were Sunni, and two were Shia. In homogeneous class groups, all six participants were either lower or upper income. In mixed class groups, three participants were lower income and three were upper income (to see how we determined participant class, see Appendix A.3). Table A.1 provides a summary of the randomization while Table A.2 shows how class and sect combine for each of the 24 discussions in a set. The 120 discussion groups were organized in five sets of 24 discussion sessions (6 sessions x 4 group types).² The second and fourth sets were all-women; the first, third, and fifth sets were all-men.

¹While our analysis employs the same estimation strategy as pre-registered (see Appendix ??), we did not pre-register that we were going to analyze the results of the public goods experiment by gender.

²A set of discussions was completed every 2-3 weeks between February and April 2016.

To obtain the correct group compositions, we in fact recruited and randomly assigned 1200 individuals of which 720 would ultimately participate and 480 would be ‘back-ups’. Upon arrival at their scheduled discussion session, participants were checked in by staff and informed consent was administered. Participants were not designated as ‘main’ or ‘backup’ in advance and if extra participants arrived, those that were asked to stay were randomly selected. This was essential to ensure that those who participated in each discussion were a random sample of those who were assigned to that treatment condition. There were some issues in how the scheduling was implemented that could raise concerns about non-comparability of the treatment and control groups. We describe the issue below in Appendix A.4.

Group type 1: Same sect, same class						Group type 2: Mixed sect, same class					
1	2	3	4	5	6	7	8	9	10	11	12
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Sun.	P. Sun.	P. Sun.	R. Sun.	R. Sun.	R. Sun.
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Sun.	P. Sun.	P. Sun.	R. Sun.	R. Sun.	R. Sun.
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Shi.	P. Shi.	P. Shi.	R. Shi.	R. Shi.	R. Shi.
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Shi.	P. Shi.	P. Shi.	R. Shi.	R. Shi.	R. Shi.
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Chr.	P. Chr.	P. Chr.	R. Chr.	R. Chr.	R. Chr.
P. Sun.	P. Shi.	P. Chr.	R. Sun.	R. Shi.	R. Chr.	P. Chr.	P. Chr.	P. Chr.	R. Chr.	R. Chr.	R. Chr.
Group type 3: Same sect, mixed class						Group type 4: Mixed sect, mixed class					
13	14	15	16	17	18	19	20	21	22	23	24
P. Sun.	P. Sun.	P. Shi.	P. Shi.	P. Chr.	P. Chr.	P. Sun.	P. Sun.	P. Sun.	P. Sun.	P. Sun.	P. Sun.
P. Sun.	P. Sun.	P. Shi.	P. Shi.	P. Chr.	P. Chr.	R. Sun.	R. Sun.	R. Sun.	R. Sun.	R. Sun.	R. Sun.
P. Sun.	P. Sun.	P. Shi.	P. Shi.	P. Chr.	P. Chr.	P. Shi.	P. Shi.	P. Shi.	P. Shi.	P. Shi.	P. Shi.
R. Sun.	R. Sun.	R. Shi.	R. Shi.	R. Chr.	R. Chr.	R. Shi.	R. Shi.	R. Shi.	R. Shi.	R. Shi.	R. Shi.
R. Sun.	R. Sun.	R. Shi.	R. Shi.	R. Chr.	R. Chr.	P. Chr.	P. Chr.	P. Chr.	P. Chr.	P. Chr.	P. Chr.
R. Sun.	R. Sun.	R. Shi.	R. Shi.	R. Chr.	R. Chr.	R. Chr.	R. Chr.	R. Chr.	R. Chr.	R. Chr.	R. Chr.

Table A.2: Individual profiles by group type

A.3 Recruitment

Identifying lower and upper income participants. To determine whether potential participants were rich or poor for the class randomization, following extensive piloting, eight questions about economic status were asked on the screening survey and these were used to create an index (see Table A.3). The screening survey recorded answers about income, assets, leisure travel and dining, and electricity usage. Responses for each question were re-coded into three categories where one equaled poor, two equaled middle class, and three equaled rich. These scores were summed across the eight questions such that individuals with scores of 8-13 were considered lower income, individuals with scores of 19-24 were considered upper income and individuals with scores of 14-18 were middle income and were excluded from eligibility.

Obtaining target numbers of participants. There were only a few instances in which sessions proceeded with fewer than six individuals or with individuals with different demographic profiles than anticipated. This includes seven instances in which groups proceeded with five rather than six individuals, either because an insufficient number showed up or because a participant left before the session was concluded. This affected three same/same groups, 2 mixed sect/same class groups, 1 same sect/mixed class group, and 1 mixed/mixed group. The effects of the imbalance are plausibly the greatest for the groups that are not homogeneous. To address concerns, we control for the

Screening Survey Questions Included in Economic Status Index			
Question No.	Question Text	Answer Options	Scoring for Index (1-3)
1	When you think of the total number of your household acquisitions (houses, lands, cars, mobile phones, computers and laptops, household appliances, valuable furniture/decoration items, jewelry, etc.) what is, roughly, their estimated total value?	0 - 250,000 USD	1
		250,001 - 500,000 USD	2
		500,001+ USD	3
		Don't know/Refuse/NA	0
2	What is the estimated area of your main place of residency?	Less than 150m ²	1
		150 to 250m ²	2
		More than 250m ²	3
		Don't know/Refuse/NA	0
3	Do you own a summer house? (Including chalets in seaside resorts)	No	1
		It happens that we rent a place for summer but not consistently	2
		Yes	3
		Don't know/Refuse/NA	0
4	When faced with power shortage, what alternatives do you resort to?	Nothing, we don't have money to buy power	1
		We buy power from a private generator 5 A	1
		We buy power from a private generator 10 A	2
		We buy power from a private generator 15 A+	3
		We own a private generator	3
Don't know/Refuse/NA	0		
5	In general, can you afford to travel on a leisure trip with your family at least once a year?	No we can't afford it	1
		Yes, but only to cheaper destinations, or on tour offers	2
		Yes, we can go wherever we want	3
		Don't know/Refuse/NA	0
6	In a typical month, how often can you afford to go with your family for lunch or dinner to restaurants (for bills totaling at least 100 USD)?	0	1
		1 to 2	2
		3+	3
		Don't know/Refuse/NA	0
7	What is your family's net monthly income? (Shown here in US Dollars but both options were provided in the original questionnaire.)	0	1
		1 - 120	1
		121 - 333	1
		334 - 667	1
		668 - 1,333	1
		1,334 - 2,667	1
		2,668 - 4,000	2
		4,001 - 5,333	2
		5,334 - 7,333	3
		7,334 - 9,333	3
		9,334 - 12,667	3
		12,668 - 16,667	3
		16,668 - 26,667	3
		26,668 - 53,333	3
53,334 or more	3		
Don't know/Refuse	0		
8	Which of the following is the best description of your family's monthly income?	The family income does not cover our needs and we face major problems making ends meet	1
		The family income barely covers our needs and we sometimes face problems making ends meet	1
		The family income covers our needs but we cannot afford luxury items or any extra leisure activities	2
		The family income covers our needs without us facing any major difficulties	3
		The family income very well covers our needs and we can also save some of it.	3
		Don't know/Refuse/NA	0
Creating the Index:			
The minimum score is 8 (1 point on each question above)		Score between 8 and 13 = lower income individuals	
The maximum score is 24 (3 points on each question above)		Score between 14 and 18 = middle class individuals disregarded	
Scores below 8 means that at least one question was not responded to.		Score between 19 and 24 = upper middle class individuals	
If more than two questions are not responded to, the screener is disregarded.			
If 1 or 2 questions are not responded to, the following scoring applies:		Score between 6 and 9 = lower income individuals	
		Score between 10 and 13 = middle class individuals disregarded	
		Score between 14 and 18 = upper middle class individuals	

Table A.3: Screening Survey Questions and Index Creation.

number of session participants in each group, described in Appendix E. We also checked to make sure that we did not accidentally have individuals who knew each other in the same session. While 41 individuals in 26 sessions reported that they knew at least one person in their session group prior to the session, only 15 of those 41 were women participants. Upon further investigation with the session organizers, we learned that these were mostly cases in which individuals had been

transported together or met casually just prior to the session. We nonetheless control for the total number of people in the session that each participant reported knowing beforehand (see Appendix E).

A.4 Possible concerns about selection into participation

The way in which individuals were scheduled to participate in the sessions gives some cause for concern that there was selection into participation in a way that could have introduced imbalances in pre-treatment characteristics for individuals in different arms. Recall that we recruited a total of 1200 individuals in order to obtain 720 participants and 480 back-ups. To obtain the 1200, we recruited 40 individuals of each of the six profile types (e.g. poor Sunni, rich Sunni, poor Shia, rich Shia, poor Christian, rich Christian) for each of the five sets. For each set we block randomized individuals by profile type with the the goal of obtaining 24 participants and 16 extras for each session. Panel A of Table A.4 shows how the 40 individuals of each profile type were assigned and Panel B of Table A.4 shows the target number of participants per treatment. The targets were set this way because we anticipated needing a different number of backups for each experimental condition.³

Table A.4: Illustration of potential selection into participation

		Mixed sectarian				Mixed sectarian	
		<i>N</i>	<i>Y</i>			<i>N</i>	<i>Y</i>
Mixed class	<i>N</i>	9	9	Mixed class	<i>N</i>	6	6
	<i>Y</i>	10	12		<i>Y</i>	6	6
Panel A: Treatment assignment ($n = 40$)				Panel B: Target participated ($n = 24$)			
		Mixed sectarian				Mixed sectarian	
		<i>N</i>	<i>Y</i>			<i>N</i>	<i>Y</i>
Mixed class	<i>N</i>	$4.5/9 = .50$	$4.5/9 = .50$	Mixed class	<i>N</i>	$4.5/6 = .75$	$4.5/6 = .75$
	<i>Y</i>	$5/10 = .50$	$6/12 = .50$		<i>Y</i>	$5/6 = .83$	$6/6 = 1$
Panel C: Proportion of those assigned who are ‘very enthusiastic’				Panel D: Proportion of those who participated who are ‘very enthusiastic’			

Implementing randomization in this way would still yield unbiased estimates of treatment effects as long as those who actually participated in the session were a random sample of the pool that was assigned. We worked with the implementing partner to design a procedure to try to ensure that this would be the case. First, the partner pre-screened all eligible participants for willingness to participate in a discussion on political and economic issues (without providing any information on the differing sectarian compositions of the groups). This resulted in a pool of potential participants who were all willing to join in the activity. We asked our implementing partner to schedule the sessions such that every person in the pool would show up at one in accordance with their

³Specifically, we planned to over-recruit by 50 percent. For example, for poor Sunnis in homogeneous groups there was one session and we needed six participants and 3 backups ($6 \times 1 + 3 \times 1 = 9$). The mixed sect/same class treatment required two poor Sunnis for three sessions and one backup for each session ($2 \times 3 + 1 \times 3 = 9$). The same sect/mixed class treatment required three poor Sunnis for two sessions and two backups for each session ($3 \times 2 + 2 \times 2 = 10$). And the fully mixed treatment required one poor Sunni for six sessions plus one backup for each session ($1 \times 6 + 1 \times 6 = 12$).

treatment assignment, ensuring that we always had more individuals than necessary of each profile type at each session. The implementing partner was then supposed to randomly select (for each profile type) who would actually stay to participate and who would be asked to go home (after receiving compensation) or invited to a different session. In actuality, however, the partner typically ended up getting only the target number of participants to show up for each session, which introduces the possibility that there was some differential selection into who ended up participating.

To see why this is an issue, assume that there is some (unobserved) variable like *enthusiasm* that affects willingness to participate. Assume also that treatment assignment achieved balance in this variable across the four experimental conditions. For illustrative purposes, we assume that 50 percent of all assigned individuals are *very* enthusiastic and the rest were only moderately enthusiastic. Panel C of Table A.4 shows the proportion of individuals assigned who were very enthusiastic and we can see that this is balanced across the four experimental conditions. Assume then that all very enthusiastic individuals were the easiest to schedule and were therefore more likely to participate (regardless of their treatment assignment, which they did not know before arrival). Panel D of Table A.4 shows how, if this were the case, the enthusiasm proportion would now be imbalanced across the treatment conditions among those who actually participated. We emphasize that this issue is not related to the treatment assignment itself but rather to the fact that we assigned a varying number of individuals in each experimental condition in order to reach our target of six participants of each profile.

One way to avoid this problem would have been to over-recruit even more individuals, for instance if we had a pool of 48 of each profile type rather than 40 (meaning that we would have had 12 people assigned to each experimental condition rather than the configuration shown in Panel A). This would have required the partner to over-recruit an additional 8 individuals from 6 profiles for each of 5 sets for a total of recruiting an additional 240 people. At the time of design our implementing partner strongly preferred the plan described above because they felt it would be more manageable and cost-effective than over-recruiting even more as they were already at the maximum of what they felt they could do.

So, how concerned should we be? After we discovered this, we discussed extensively with our partner and it seems that in most cases attendance was driven by idiosyncratic scheduling factors rather than systematic differences. Moreover, for this to be a problem, there would have to be not only non-trivial differential participation but also that this disparity would have to have non-trivial impacts on cooperation. While we think this unlikely, some might find this only somewhat reassuring. We are further reassured by the fact that the checks in Appendix B suggest balance on a large number of pre-treatment covariates between treatment and control. We include covariates in all analysis to address concerns.

A.5 Treatment Assignment Probabilities

Our main analysis employs inverse probability weights to correct for unequal treatment assignment probabilities. We use two different weights. As described above, we block randomly assigned participants based on profile and set using the same probabilities in each block ($\frac{9}{40}$, $\frac{9}{40}$, $\frac{10}{40}$, and $\frac{12}{40}$). In practice we stratified treatment assignment not only on set and profile type but, where possible, we created even smaller strata using additional information on recruiter and participant neighborhood and randomly assigned individuals using proportional probability assignment within these small strata. We used these small strata to minimize the chances that discussion participants

would know each other, which was more likely if they came from the same neighborhood and/or same recruiter network. In going from our pool of 40 of each type to our 24 participants, we lose observations in small strata cells, resulting in a large number of empty cells. Panel A of [A.5](#) provides an illustration of this, showing the number of participants as assigned in small strata (left) and the number of participants that actually took part in the discussions (right).

We address this issue through post-stratification where we collapse the strata until we have no empty cells and then create new weights so that those who participated are weighted up to reflect the pool of potential participants originally assigned. We create two versions of weights based on two ways of collapsing the strata. First we created new ‘smaller’ strata where we collapsed cells such that we had no empty cells but where we retained information on recruiter or neighborhood where possible. Panel B in [Table A.5](#) provides an example of how this was done. We then construct probability weights to weight individuals who participated up to reflect the ‘population’ as assigned. Second, we create ‘bigger’ strata where we collapse such that strata are formed by profile and set only, as in Panel C. We again create weights to weight those who participated up to the population of those assigned.

Our main analysis uses weighted least squared regression employing the weights created for the smaller strata. In [Appendix F](#) we check the robustness of results to several additional specifications, including estimates of treatment effects on the sample, estimates using the weights for bigger strata, and estimates with block fixed effects using smaller and bigger strata.

Table A.5: Example of post-stratification

Panel A: Example of treatment assignment and participation in small strata				
	Assigned (n=40)		Participated (n=24)	
Small strata 1	1	1	1	0
	1	1	0	1
Small strata 2	1	1	0	0
	1	2	0	1
Small strata 3	1	1	1	1
	2	2	1	1
Small strata 4	2	2	2	2
	2	2	2	1
Small strata 5	2	2	0	2
	2	2	1	2
Small strata 6	2	2	2	1
	2	3	2	0
Panel B: Example of treatment assignment and participation in ‘smaller’ strata after collapsing strata				
	Assigned (n=40)		Participated (n=24)	
New small strata	6	6	3	3
(collapsed 1, 2, 5, 6)	6	8	3	4
Small strata 3	1	1	1	1
	2	2	1	1
Small strata 4	2	2	2	2
	2	2	2	1
Panel C: Example of treatment assignment and participation in ‘bigger’ strata				
	Assigned (n=40)		Participated (n=24)	
‘Big’ strata	9	9	6	6
	10	12	6	6

B Balance Checks

We use data from the screening survey and self-administered baseline survey (which participants completed after giving consent but before the session began) to check balance. The screening and pre-treatment surveys contain 50 variables that can be used to check balance. While we check balance using the individual covariates, we also use inverse covariance weighting to create pre-specified indices for measures that capture a common underlying concept (we use the indices as controls rather than the individual variables in the main analysis). Table B.1 presents results for the balance tests for both women and men for the individual covariates as well as for the indices.⁴ We test for balance with a weighted least squares regression of the variable on a binary indicator for treatment status (mixed-class = 1) with robust standard errors.

The balance tests in Table B.1 show that five out of 50 covariates are significant at the 95 percent confidence level for women. While this is slightly higher than what we would expect by chance, these imbalances could be due to the relatively small sample. To address these imbalances we include all variables as controls in our main regressions. We also note that our main results for women are significant at the 99 percent confidence level and we have very few chance imbalances at that level of significance. With respect to men, only two of the 50 covariates are significant at the 95 percent confidence level, which is what we would expect by chance. Taken together, these balance tests suggest that the randomization procedure was largely effective in ensuring that characteristics are likely to be evenly distributed across our treatment (mixed-class) and control (same-class) groups.

We also test for balance across the four experimental arms created by the 2x2 factorial design by running a weighted least squares regression of each covariate on the treatment assignment indicators and their interaction as described in footnote 15 in the main text. The results in Table B.2 for women and Table B.3 for men show only a few instances of chance imbalance at the 95 percent confidence-level. These results help to address concerns about the integrity of the randomization described in Appendix A. In Appendix G we check the robustness of the results to the inclusion of controls, which correct for chance imbalance.

⁴We note that if there is an imbalance in an index component there is likely to be an imbalance in the index itself.

	Mixed class (women)		Mixed class (men)	
	b	p	b	p
Panel A: Individual Variables				
Demographics				
Age	0.66	0.625	0.32	0.696
Marital status	0.01	0.842	0.05	0.296
Post-secondary education	0.01	0.857	-0.03	0.568
Christian	0.00	1.000	0.00	0.923
Sunni	0.00	0.957	0.00	1.000
Shia	0.00	0.956	0.00	0.922
Economic wealth index				
Assets (screening)	0.01	0.931	-0.04	0.577
HH area (screening)	-0.06	0.472	-0.02	0.737
Summer house (screening)	-0.02	0.859	0.05	0.602
Electricity (screening)	0.05	0.655	0.10	0.315
Vacation (screening)	-0.01	0.893	-0.05	0.586
Dineout (screening)	-0.04	0.687	0.03	0.652
Household income (screening)	-0.05	0.801	0.04	0.756
Income subjectie (screening)	-0.02	0.913	0.04	0.760
Household income (pre-treatment)	-0.26	0.241	0.10	0.611
Self-identified class (pre-treatment)	-0.02	0.827	0.07	0.357
Students (%)	0.01	0.839	-0.01	0.734
Homemaker (%)	0.06	0.313	0.01	0.180
Prejudice index				
Marrying someone from a diff confession	-0.06	0.686	0.01	0.923
Diff confession as physician	0.10	0.235	0.09	0.160
Dif confession as neighbor	0.04	0.636	0.02	0.830
Discussion politics with diff confession	0.15	0.272	0.02	0.864
Discussing social or econ issues with diff confession	0.05	0.630	0.04	0.602
Supervised by diff confession	0.22	0.025	-0.02	0.811
Friends with diff confession	0.06	0.432	-0.01	0.836
Political action index				
Discuss issues	-0.13	0.032	0.04	0.369
Talked to party members	-0.07	0.083	0.02	0.627
Signed a petition	0.03	0.177	0.02	0.497
Attended protest	-0.01	0.862	0.07	0.208
Social homogeneity index				
Friends from same class	-0.08	0.488	-0.09	0.351
Friends from same sect	0.23	0.114	-0.07	0.456
How often do you discuss when disagree	-0.07	0.463	-0.06	0.495
Sectarian identity index				
Willing to change sect	-0.21	0.030	-0.11	0.213
Support sectarian political party	-0.17	0.007	0.01	0.778
Strong sectarian identity	0.10	0.688	0.27	0.208
Well connected to sectarian elite index				
Help from zaim	-0.15	0.161	0.15	0.163
Help from religious leader	-0.05	0.666	-0.04	0.740
Strength of age group identity	0.36	0.142	0.12	0.555
Strength of gender identity	0.05	0.854	0.19	0.357
Strength of class identity	0.11	0.648	0.01	0.976
Strength of occupational identity	0.21	0.401	0.11	0.545
Strength of Lebanese identity	0.02	0.947	-0.38	0.054
Panel B: Implementtion variables				
Moderator 1 (of 2)	0.04	0.456	0.06	0.219
Groups with six participants	0.04	0.122	0.06	0.018
Knew people in group	0.08	0.015	-0.03	0.618
Days until the municipal election	-4.59	0.108	-6.39	0.049
Mixed sect treatment assignment	0.00	1.000	0.00	1.000
Answered all practice problems correctly (%)				
Correctly answered amount earned from group pot	-0.01	0.519	-0.03	0.126
Corrently answered group pot share	0.01	0.851	0.01	0.621
Correctly answered total earned	0.02	0.598	0.01	0.647

Notes: P-values are from a two-tailed test.

Table B.1: Balance checks

	Same sect, same class		Mixed sect, same class (B1)		Same sect, mixed class (B2)		Interaction (B3)	
	mean	b	p	b	p	b	p	
Panel A: Individual Variables								
Demographics								
Age	37.46	-3.44	0.068	-0.86	0.664	3.04	0.262	
Marital status	0.71	0.01	0.906	0.02	0.781	-0.02	0.843	
Post-secondary education	0.58	0.04	0.596	0.03	0.693	-0.05	0.705	
Christian	0.33	0.00	1.000	0.00	1.000	0.00	1.000	
Sunni	0.33	0.00	1.000	0.00	1.000	-0.01	0.957	
Shia	0.33	0.00	1.000	0.00	1.000	0.01	0.956	
Economic wealth index								
Assets (screening)	1.63	-0.03	0.773	-0.04	0.719	0.10	0.563	
HH area (screening)	1.75	-0.01	0.918	-0.12	0.301	0.11	0.491	
Summer house (screening)	2.06	-0.02	0.901	-0.03	0.874	0.01	0.964	
Electricity (screening)	2.40	0.13	0.407	0.20	0.189	-0.30	0.169	
Vacation (screening)	1.89	-0.11	0.451	-0.12	0.411	0.21	0.324	
Dineout (screening)	2.04	0.07	0.560	0.00	1.000	-0.07	0.689	
Household income (screening)	6.52	0.28	0.297	0.16	0.568	-0.42	0.277	
Income subjectie (screening)	3.28	-0.01	0.947	-0.01	0.967	-0.02	0.959	
Household income (pre-treatment)	6.28	-0.16	0.584	-0.23	0.435	-0.05	0.900	
Self-identified class (pre-treatment)	1.00	0.12	0.274	0.05	0.659	-0.14	0.397	
Student %	0.10	0.00	0.943	0.02	0.697	-0.03	0.723	
Homemaker %	0.55	-0.02	0.832	0.05	0.581	0.03	0.821	
Prejudice index								
Marrying someone from a diff confession	2.64	-0.18	0.345	-0.07	0.737	0.02	0.951	
Diff confession as physician	1.35	-0.07	0.555	0.02	0.836	0.16	0.359	
Dif confession as neighbor	1.54	-0.07	0.516	0.09	0.470	-0.10	0.555	
Discussion politics with diff confession	1.95	0.31	0.099	0.44	0.028	-0.57	0.046	
Discussing social or econ issues with diff confession	1.64	0.07	0.614	0.02	0.883	0.06	0.781	
Supervised by diff confession	1.60	-0.15	0.211	0.25	0.072	-0.06	0.762	
Friends with diff confession	1.40	-0.17	0.112	0.07	0.597	-0.01	0.964	
Political action index								
Discuss issues	0.71	0.04	0.610	-0.11	0.177	-0.03	0.806	
Talked to party members	0.17	-0.06	0.350	-0.11	0.058	0.09	0.281	
Signed a petition	0.04	-0.03	0.304	0.04	0.341	-0.02	0.752	
Attended protest	0.28	-0.02	0.838	0.03	0.703	-0.08	0.474	
Social homogeneity index								
Friends from same class	0.14	-0.09	0.586	0.05	0.781	0.05	0.834	
Friends from same sect	2.96	0.00	0.980	-0.06	0.708	-0.04	0.862	
How often do you discuss when disagree	2.77	-0.16	0.405	0.16	0.443	0.14	0.624	
Sectarian identity index								
Willing to change sect	2.31	0.14	0.298	-0.03	0.832	-0.09	0.669	
Support sectarian political party	0.33	-0.18	0.261	-0.40	0.016	0.23	0.335	
Strong sectarian identity	3.61	0.02	0.836	-0.18	0.188	-0.07	0.735	
Well connected to sectarian elite index	0.64	-0.15	0.156	-0.24	0.008	0.14	0.290	
Help from zaim	4.44	-0.17	0.635	-0.15	0.666	0.51	0.322	
Help from religious leader	-0.19	0.11	0.524	-0.12	0.457	0.00	0.989	
Strength of age group identity	1.73	0.08	0.631	-0.18	0.218	0.06	0.796	
Strength of gender identity	1.94	0.12	0.518	-0.03	0.878	-0.05	0.828	
Strength of class identity	4.11	0.40	0.240	0.64	0.053	-0.55	0.257	
Strength of occupational identity	5.37	-0.03	0.927	0.17	0.630	-0.25	0.599	
Strength of Lebanese identity	3.77	-0.08	0.796	0.17	0.614	-0.13	0.772	
Panel B: Implementation Variables								
Moderator 1 (of 2)	5.51	-0.07	0.826	-0.21	0.558	0.44	0.352	
Groups with six participants	4.47	-0.63	0.080	0.07	0.820	0.27	0.594	
Days until municipal election	0.50	-0.25	0.002	-0.09	0.320	0.26	0.029	
Answered all practice problems correctly	0.92	0.01	0.768	0.08	0.020	-0.08	0.152	
	65.17	-3.61	0.391	-3.18	0.437	-2.81	0.621	
	0.85	0.03	0.612	0.01	0.905	0.04	0.573	

Notes: P-values are from a two-tailed test. N=713.

Table B.2: Balance check, Factorial Design (Women)

	Same sect, same class		Mixed sect, same class (B1)		Same sect, mixed class (B2)		Interaction (B3)	
	mean	b	p	b	p	b	p	
Panel A: Individual Variables								
Demographics								
Age	28.02	0.77	0.510	1.11	0.307	-1.57	0.343	
Marital status	0.28	0.11	0.089	0.10	0.144	-0.09	0.344	
Post-secondary education	0.72	0.01	0.829	-0.04	0.539	0.03	0.760	
Christian	0.33	0.01	0.893	0.00	1.000	-0.01	0.923	
Sunni	0.33	0.00	1.000	0.00	1.000	0.00	1.000	
Shia	0.33	-0.01	0.889	0.00	1.000	0.01	0.922	
Economic wealth index								
Assets (screening)	-0.01	0.07	0.641	0.07	0.618	-0.05	0.795	
HH area (screening)	1.69	-0.03	0.787	-0.08	0.472	0.07	0.641	
HH area (screening)	1.72	0.02	0.880	-0.04	0.704	0.03	0.852	
Summer house (screening)	2.02	-0.02	0.894	0.01	0.933	0.08	0.689	
Electricity (screening)	2.53	0.04	0.760	0.15	0.295	-0.10	0.619	
Vacation (screening)	1.95	-0.04	0.746	-0.09	0.449	0.09	0.608	
Dineout (screening)	2.16	-0.06	0.589	-0.05	0.628	0.17	0.245	
Household income (screening)	6.77	0.01	0.970	-0.01	0.954	0.11	0.694	
Income subjective (screening)	3.33	-0.08	0.682	-0.01	0.946	0.11	0.690	
Household income (pre-treatment)	6.26	0.12	0.675	0.12	0.650	-0.05	0.896	
Self-identified class (pre-treatment)	0.95	0.08	0.434	0.14	0.174	-0.14	0.334	
Student %	0.16	-0.01	0.867	-0.02	0.633	0.02	0.752	
Homemaker %	0.00	0.00	-	0.01	0.318	0.00	0.655	
Prejudice index								
Marrying someone from a diff confession	-0.07	-0.11	0.449	0.06	0.688	-0.03	0.882	
Diff confession as physician	2.13	-0.10	0.495	-0.07	0.611	0.16	0.419	
Diff confession as neighbor	1.31	-0.07	0.400	0.10	0.252	-0.04	0.776	
Discussion politics with diff confession	1.56	-0.10	0.411	0.02	0.877	0.00	0.987	
Discussing social or econ issues with diff confession	1.93	-0.02	0.879	0.13	0.397	-0.22	0.279	
Supervised by diff confession	1.62	-0.16	0.194	-0.03	0.808	0.15	0.369	
Friends with diff confession	1.65	0.07	0.591	0.05	0.711	-0.13	0.449	
Political action index	1.38	-0.05	0.653	0.01	0.910	-0.05	0.706	
Discuss issues	0.07	-0.01	0.942	0.12	0.441	0.04	0.845	
Talked to party members	0.71	0.01	0.878	0.06	0.371	-0.03	0.717	
Signed a petition	0.13	-0.01	0.912	0.00	0.926	0.02	0.722	
Attended protest	0.08	-0.01	0.701	0.01	0.729	0.01	0.860	
Social homogeneity index	0.39	0.01	0.877	0.05	0.535	0.04	0.702	
Friends from same class	0.08	-0.22	0.121	-0.06	0.664	-0.09	0.628	
Friends from same sect	2.90	-0.09	0.541	0.01	0.922	-0.22	0.277	
How often do you discuss when disagree	2.74	-0.27	0.053	-0.12	0.413	0.08	0.676	
Sectarian identity index	2.31	0.03	0.796	0.00	0.999	-0.11	0.496	
Willing to change sect	-0.03	-0.08	0.557	0.04	0.783	-0.06	0.791	
Support sectarian political party	3.48	-0.16	0.154	-0.09	0.437	-0.04	0.802	
Strong sectarian identity	0.45	0.02	0.811	0.02	0.829	0.00	0.979	
Well connected to sectarian elite index	4.08	0.00	0.994	0.33	0.291	-0.12	0.800	
Help from zaim	0.01	0.15	0.361	0.31	0.043	-0.49	0.025	
Help from religious leader	1.83	0.20	0.207	0.38	0.012	-0.46	0.032	
Strength of age group identity	2.19	0.06	0.708	0.17	0.277	-0.41	0.061	
Strength of gender identity	4.61	-0.19	0.486	-0.05	0.866	0.33	0.391	
Strength of class identity	4.66	0.25	0.344	0.32	0.262	-0.28	0.481	
Strength of occupational identity	3.79	0.27	0.313	0.28	0.276	-0.55	0.151	
Strength of Lebanese identity	5.81	0.12	0.613	-0.34	0.237	-0.10	0.808	
Strength of sectarian identity	4.93	-0.20	0.455	0.06	0.807	0.10	0.791	
Panel B: Implementation Variables								
Moderator 1 (of 2)	0.33	0.06	0.346	0.11	0.106	-0.10	0.309	
Groups with six participants	0.89	0.06	0.127	0.06	0.131	-0.01	0.769	
Knew people in group	0.07	0.10	0.160	0.01	0.799	-0.08	0.446	
Days until municipal election	65.83	-2.97	0.520	-6.64	0.142	0.51	0.938	
Answered all practice problems correctly	0.77	0.11	0.050	0.07	0.182	-0.16	0.038	

Notes: P-values are from a two-tailed test. N=713.

Table B.3: Balance check, Factorial Design (Men)

C Comparison of Discussion Sample to Lebanese Population

To assess the comparability of our participants to the population of the Beirut/Mount Lebanon area and the entire country, we take advantage of the fact that we also conducted a nationally representative survey of Lebanese citizens in early 2016, just prior to implementing the public goods experiments. We can benchmark the characteristics of our sample against what we know about the population from this survey.

We first briefly summarize the survey methodology here. More detailed information is available from the authors upon request. The survey was conducted with 2,496 adult Lebanese citizens (18-65 years of age). Respondents were selected through multi-stage cluster sampling. Primary sampling units (PSUs) were villages in rural areas and cities or neighborhoods in urban areas. PSUs were randomly sampled—within strata defined by district, population size, and predominant sect—using simple random sampling. Households (and individuals within households) were randomly sampled within PSUs, with one respondent per household. To achieve a similar number of men and women in the sample, a target sex was set for each household. To draw population level inferences we employ a number of different design and post-survey weighting strategies. The analysis presented here uses entropy balancing as a re-weighting method as in [Hainmueller \(2012\)](#), although we get similar results if we use design weights, raked weights, or entropy balancing weights.

Appendix Tables [C.1](#) and [C.2](#) uses 25 comparable questions on both the nationally representative survey and the self-administered survey completed just before the public goods game was played to compare our women and men participants to the population in the Beirut/Mt Lebanon areas as well as nationwide. It shows, for instance, that women in our sample were more likely to be married than the average woman in the Beirut and Mount Lebanon area, less likely to have post-secondary education, and perhaps more likely to have socially homogeneous social networks. We also emphasize that one of the differences between the sample and the population is that the sample intentionally excludes individuals who are middle-class, which could explain differences on a number of other measures correlated with class.

While it is difficult to speculate on the extent to which the results for our sample would generalize to the population, we hope that this comparison provides a basis for readers who might have a particular interest in a particular characteristic. For instance, insofar as women in our sample have more homogeneous class networks than women in the Beirut/Mt Lebanon population (mean of 2.90 versus 2.48)—and the negative effects of mixed class discussion hold for women on average but are stronger for those with homogeneous networks (see [Appendix H](#)—this suggests that the average effects in the population might still be negative but smaller in magnitude than those found in the sample.

	Variable Range		Discussion sample			Beirut/Mt. Lebanon population			All Lebanon population		
	Min	Max	Mean	SD	N	Mean	SD	N	Mean	SD	N
Demographics											
Age	19	60	36	11	285	41	16	373	39	14	1230
Married	0	1	0.73	0.45	285	0.51	0.50	373	0.52	0.50	1230
At least secondary education	0	1	0.61	0.49	285	0.71	0.45	373	0.60	0.49	1230
Christian	0	1	0.33	0.47	285	0.57	0.49	373	0.44	0.50	1230
Sunni	0	1	0.33	0.47	285	0.09	0.29	373	0.24	0.43	1230
Shia	0	1	0.34	0.47	285	0.21	0.41	373	0.25	0.43	1230
Economic welfare											
Income (scale 1-15)	1	11	6.06	1.76	285	5.24	0.76	373	4.91	1.01	1230
Employed (at least part-time)	0	1	0.30	0.46	284	0.46	0.50	373	0.42	0.49	1230
Perceived economic class	1	5	3.06	0.73	278	2.47	0.65	373	2.44	0.62	1230
Subjective income	1	5	3.27	1.28	285	2.32	0.67	373	2.29	0.68	1230
Unemployment is top three concern	0	1	0.29	0.46	285	0.25	0.43	373	0.27	0.44	1230
Rising prices are a top three concern	0	1	0.25	0.44	285	0.47	0.50	373	0.50	0.50	1230
Clientelist connections											
Connected to Zaim	1	4	1.74	0.91	285	1.53	0.77	373	1.73	0.90	1230
Connected to religious leader	1	4	2.02	0.99	285	1.77	0.94	373	1.89	1.00	1230
Political action											
Talk to party members/MPs/Zaim	0	1	0.10	0.30	285	0.06	0.24	373	0.04	0.20	1230
Signed a petition	0	1	0.04	0.18	285	0.13	0.34	373	0.08	0.27	1230
Attended protest	0	1	0.27	0.44	285	0.27	0.44	373	0.15	0.36	1230
Comfortable [] a non co-sectarian											
Marrying	1	4	2.53	1.09	285	2.60	1.15	373	2.87	1.14	1230
Being neighbors with	1	4	1.52	0.72	285	1.47	0.75	373	1.64	0.85	1230
Being supervised by	1	4	1.65	0.78	285	1.41	0.72	373	1.68	0.91	1230
Being friends with	1	4	1.35	0.64	285	1.30	0.62	373	1.61	0.88	1230
Network Homogeneity											
Proportion of friends from a different sect	1	5	2.79	1.17	285	2.31	0.80	373	2.89	1.10	1230
Proportion of friends from a different class	1	5	2.90	0.98	285	2.48	0.70	373	2.93	1.02	1230
Discuss with those with whom you disagree	1	4	2.36	0.82	285	2.53	0.76	373	2.84	0.84	1230

Table C.1: Comparison of discussion participants to Lebanese population (women)

	Variable Range		Discussion sample			Beirut/Mt. Lebanon population			All Lebanon population		
	Min	Max	Mean	SD	N	Mean	SD	N	Mean	SD	N
Demographics											
Age	18	65	29	8	428	43	14	394	40	14	1265
Married	0	1	0.36	0.48	428	0.61	0.49	394	0.64	0.48	1265
At least secondary education	0	1	0.71	0.45	428	0.54	0.50	394	0.47	0.50	1265
Christian	0	1	0.33	0.47	428	0.42	0.49	394	0.34	0.47	1265
Sunni	0	1	0.34	0.47	428	0.20	0.40	394	0.32	0.47	1265
Shia	0	1	0.33	0.47	428	0.24	0.43	394	0.25	0.43	1265
Economic welfare											
Income (scale 1-15)	1	12	6.36	1.87	428	5.22	0.73	394	4.95	0.88	1265
Employed (at least part-time)	0	1	0.81	0.39	428	0.88	0.33	394	0.88	0.32	1265
Perceived economic class	1	5	3.04	0.78	412	2.46	0.59	394	2.44	0.58	1265
Subjective income	1	5	3.31	1.34	428	2.33	0.62	394	2.29	0.67	1265
Unemployment is top three concern	0	1	0.29	0.45	428	0.36	0.48	394	0.34	0.47	1265
Rising prices are a top three concern	0	1	0.25	0.44	428	0.44	0.50	394	0.45	0.50	1265
Clientelist connections											
Connected to Zaim	1	4	2.02	1.04	428	1.55	0.83	394	1.72	0.94	1265
Connected to religious leader	1	4	2.19	1.00	428	1.62	0.82	394	1.85	0.99	1265
Political action											
Talk to party members/MPs/Zaim	0	1	0.13	0.34	428	0.19	0.40	394	0.14	0.34	1265
Signed a petition	0	1	0.08	0.28	428	0.10	0.31	394	0.09	0.28	1265
Attended protest	0	1	0.41	0.49	428	0.37	0.48	394	0.23	0.42	1265
Comfortable [] a non co-sectarian											
Marrying	1	4	2.08	1.00	428	2.35	1.18	394	2.64	1.21	1265
Being neighbors with	1	4	1.52	0.74	428	1.27	0.54	394	1.51	0.76	1265
Being supervised by	1	4	1.68	0.87	428	1.27	0.53	394	1.60	0.85	1265
Being friends with	1	4	1.34	0.64	428	1.15	0.39	394	1.49	0.80	1265
Network Homogeneity											
Proportion of friends from a different sect	1	5	2.58	1.02	428	2.05	0.70	394	2.70	1.12	1265
Proportion of friends from a different class	1	5	2.81	0.97	428	2.19	0.71	394	2.70	1.03	1265
Discuss with those with whom you disagree	1	4	2.31	0.79	428	1.94	0.71	394	2.48	0.95	1265

Table C.2: Comparison of discussion participants to Lebanese population (men)

D Public Goods Game Implementation

This appendix details the implementation of the public goods game. A detailed field manual with all instructions for the moderator teams and with the forms used to ensure comprehension and record contributions is available from the authors upon request.

D.1 Introducing the public goods game

Upon arrival at the study site, participants were asked to provide informed consent and fill out the self-administered pre-survey questionnaire. After filling out the survey, participants were invited to sit together at a table where everyone could see one another, as well as the trained session moderator. To ensure that participants were aware of their group composition before playing the public goods game, the moderator provided this information during her introductory remarks using the following script, which was primarily used to introduce the discussion activity that would follow the baseline data collection, of which the public goods experiment was a part:

We have invited you here today to engage in a discussion with members from [SAME/DIFFERENT] sectarian groups and [SAME/DIFFERENT] economic classes so that you can share with each other your thoughts and feelings about your economic and political hopes and concerns. Some of what we discuss today could be sensitive and at times people might disagree—that is ok. We just ask that you engage with one another with honesty and respect so that we can all learn more about how people who we do not know personally are thinking and feeling on the issues that we all face.

Participants were then asked to introduce themselves and offer basic personal information (e.g. on their jobs or neighborhoods) that would confirm their profiles to all other members of the group. After the session was introduced, a *different* member of the moderation team administered the public goods game. This was done to mitigate any potential social desirability bias that might arise from trying to ‘impress’ the moderator before engaging in the discussion.

D.2 Payoff structure of the game

Participants played with 10,000 Lebanese pounds (LBP) that they earned for completing a pre-survey upon arrival at the site. Participants were allowed to contribute any amount in 1,000 LBP increments to the group pot. To indicate their choice, participants circled a contribution amount on a slip of paper,⁵ inserted the paper into an envelope labeled with their participant identification number, and then passed the envelope back to the assistant moderator. Payoffs were determined as follows: the total amount contributed to the group pot was multiplied by 1.5 and divided evenly among all six participants, regardless of whether they contributed or not. Thus, the payoff function for each subject i was:

$$\pi_i = 10,000 - c_i + 0.25 \cdot \sum_{j=1}^6 c_j \quad (1)$$

where c_i is the contribution to the public good (group pot) of subject i , in any group whose 6 members are indexed by j . The marginal per capita return (MPCR) from the public good was 0.25 (1.5 times total contributions divided by 6). Participants were not informed of the final results of

⁵All participants had the option to contribute from 0 to 10,000 LBP in increments of 1,000.

the game until just prior to exiting the facility, after completing a post-survey questionnaire and signing receipts for payment.

A total of 713 subjects participated in the experiment.⁶ The average amount earned in the public goods game was \$7.85 USD.⁷ The maximum amount earned in the public goods game was \$14.00 USD while the minimum amount earned in the public goods game was \$2.50 USD.⁸ For women specifically, the average total payoff from the public goods game was \$7.78 USD, with a minimum earned of \$2.67 USD and a maximum of \$12.17 USD.⁹

Prior to playing the game, the public goods game moderator completed exercises with each participant to ensure their comprehension of the payoff structure. For an example of the practice problems used, see Figure D.1. The main variable equals 1 if the participants correctly answered all three questions on the example exercise worksheet provided prior to playing Round 1 of the game. As can be seen in Table D.1, comprehension scores for both women and men were high—88 percent of women answered all three questions correctly as did 82 percent of men.

	Women (n=285)				Men (n=428)			
	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
Comprehension variables								
Answered all practice problems correctly (%)	0	1	0.88	0.33	0	1	0.82	0.39
Correctly answered amount earned from group pot	0	1	0.98	0.14	0	1	0.97	0.18
Correctly answered group pot share	0	1	0.93	0.25	0	1	0.90	0.30
Correctly answered total earned	0	1	0.94	0.25	0	1	0.91	0.29

Table D.1: Summary Statistics for Comprehension Variables

D.3 Mitigating demand effects

We took steps to ensure that the study results are not an artifact of social desirability bias, experimenter effects, or moderator effects. All 120 sessions were introduced by one of two moderators. Moreover, as mentioned above, the public goods experiment itself was administered by an assistant moderator not involved in the main discussion activity that followed the baseline data collection to mitigate the possibility that participants behaved in a way to ensure that participants did not behave in a way to try to curry favor with the main moderator in the subsequent discussion. To control for any differences in abilities among moderators to introduce the sessions, we take advantage of the fact that both moderators led both same- and mixed-class groups to run regressions with moderator fixed effects. We also guarded against moderator fatigue by making sure that treatment and control groups were organized in a roughly alternating fashion. Additionally, to mitigate social desirability bias, all participants also recorded their contributions in private. Finally, we note that

⁶The average group size of six participants in our study is in line with standard public goods game designs where groups typically include 3-6 participants (Kurzman, Burton-Chellew and West, 2015, 585).

⁷For reference, the hourly minimum wage in Lebanon is about \$3.78 USD.

⁸In Lebanese currency: the average amount earned in the public goods game was 11,769 LBP, with a minimum of 3,750 LBP and a maximum of 21,000 LBP earned for the full sample of participants. The amount earned in the game was combined with a \$20 USD show-up fee for participation in all activities involved in the experiment, including the discussion portion not analyzed here, to yield each individual’s total compensation for participation in the approximately 90-minute study.

⁹For men, the average total payoff from the game was about \$7.89 USD, with a minimum of \$2.50 USD and a maximum of \$14.00 USD.

Examples Worksheet	
Group ID:	
Participant ID:	

Example 1:

Contributors	To Group Pot	Keep privately	Earned from Group Pot	Total Earned
Participant 1	8,000	2,000	4,000	6,000
Participant 2	0	10,000	4,000	14,000
Participant 3	0	10,000	4,000	14,000
Participant 4	2,000	8,000	4,000	12,000
Participant 5	2,000	8,000	4,000	12,000
Participant 6	4,000	6,000	4,000	10,000
Total in group pot	16,000			
Multiplied by 1.5	24,000			
Each person's share from Group Pot	24,000/6= 4,000			

Example 2:

Contributors	To Group Pot	Keep privately	Earned from Group Pot	Total Earned
Participant 1	1,000	9,000	12,000	21,000
Participant 2	9,000	1,000	12,000	13,000
Participant 3	9,000	1,000	12,000	13,000
Participant 4	9,000	1,000	12,000	13,000
Participant 5	10,000	0	12,000	12,000
Participant 6	10,000	0	12,000	12,000
Total in group pot	48,000			
Multiplied by 1.5	72,000			
Each person's share from Group Pot	72,000/6= 12,000			

Practice Problem

Contributors	To Group Pot	Keep privately	Earned from Group Pot	Total Earned
Participant 1	6,000	4,000		
Participant 2	5,000	5,000		
Participant 3	5,000	5,000		
Participant 4	7,000	3,000		
Participant 5	7,000	3,000		
Participant 6	10,000	0		
Total in group pot	40,000			
Multiplied by 1.5	60,000			
Each person's share from Group Pot?	60,000/6 =			

Figure D.1: Comprehension exercises

neither the moderators nor the subjects knew the hypotheses of the study in advance—indeed these results are based on exploratory analysis for which we had no *a priori* expectations.

E Control Variables

We estimate all results in the main text and in Appendix F with and without control variables. The control variables come from both the screening survey and a self-administered survey that was completed before the start of the public goods experiment. We include these measures to improve precision, check for chance imbalances (see Appendix B), and account for the fact that neither gender nor class are randomly assigned and as such there could be a number of potentially confounding factors.

Table E.1 presents summary statistics for all control indices and their components. Control indices were pre-registered. Specifically, we include two sets of controls. First, we include *individual* controls for factors like demographics, political engagement, sectarian prejudice, and network homogeneity (Panel A). We note that some of these pre-treatment covariates have been shown to affect cooperation in public goods games specifically, including (1) level of education (Candelo, Croson and Li, 2017), (2) university student status (Gächter, Herrmann and Thöni, 2004), (3) age (Martinsson, Villegas-Palacio and Wollbrant, 2015), (4) marital status (Tognetti et al., 2016), and (6) domestic laborer status (Carpenter, Daniere and Takahashi, 2004). Including these and other covariates collected through our pre-treatment survey instruments allows us to have greater confidence that the effects are due to heterogeneous group treatment exposure and not other non-random variation that exists between men and women in our sample.

Second, we include *implementation* controls that account for things related to the specific session or group (Panel B). These include moderator fixed effects (to control for differences in ability); whether the session had six participants; whether any participants new each other in advance; the number of days to the upcoming municipal elections (to control for timing effects); and whether the group was also randomly assigned to be a homogeneous or heterogeneous sectarian group (see Appendix A).

	Women (n=285)				Men (n=428)			
	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
Panel A: Individual Variables								
Demographics								
Age	19	60	36.07	11.17	18	65	28.56	8.36
Marital status	0	1	0.72	0.45	0	1	0.36	0.48
Post-secondary education	0	1	0.61	0.49	0	1	0.71	0.45
Christian	0	1	0.33	0.47	0	1	0.34	0.47
Sunni	0	1	0.33	0.47	0	1	0.33	0.47
Shia	0	1	0.33	0.47	0	1	0.33	0.47
Economic wealth index								
Assets (screening)	-2.04	2.27	-0.09	0.90	-2.22	2.30	0.05	1.05
HH area (screening)	1	3	1.61	0.71	1	3	1.65	0.79
Summer house (screening)	1	3	1.72	0.68	1	3	1.71	0.75
Electricity (screening)	1	3	2.03	0.98	1	3	2.04	0.97
Vacation (screening)	1	5	2.49	0.88	1	5	2.60	0.99
Dineout (screening)	1	3	1.83	0.84	1	3	1.91	0.85
Dineout (screening)	1	3	2.06	0.72	1	3	2.14	0.74
Household income (screening)	1	10	6.63	1.59	1	10	6.80	1.44
Income subjectie (screening)	1	5	3.27	1.28	1	5	3.31	1.34
Household income (pre-treatment)	1	11	6.07	1.77	1	12	6.37	1.85
Self-identified class (pre-treatment)	0	2	1.04	0.65	0	2	1.02	0.73
Students (%)	0	1	0.11	0.31	0	1	0.15	0.36
Homemaker (%)	0	1	0.57	0.50	0	1	0.00	0.06
Prejudice index								
Marrying someone from a diff confession	-1.26	4.16	0.15	0.98	-1.26	4.16	-0.11	1.01
Diff confession as physician	1	4	2.52	1.09	1	4	2.08	0.98
Dif confession as neighbor	1	4	1.36	0.66	1	4	1.32	0.60
Discussion politics with diff confession	1	4	1.52	0.72	1	4	1.52	0.76
Discussing social or econ issues with diff confession	1	4	2.18	1.11	1	4	1.93	1.03
Supervised by diff confession	1	4	1.70	0.86	1	4	1.57	0.80
Friends with diff confession	1	4	1.64	0.78	1	4	1.68	0.87
Friends with diff confession	1	4	1.35	0.65	1	4	1.35	0.64
Political action index								
Discuss issues	-1.20	3.25	-0.17	0.94	-1.20	3.25	0.13	1.03
Talked to party members	0	1	0.66	0.47	0	1	0.74	0.44
Signed a petition	0	1	0.10	0.30	0	1	0.13	0.34
Signed a petition	0	1	0.04	0.19	0	1	0.08	0.27
Attended protest	0	1	0.27	0.44	0	1	0.43	0.50
Social homogeneity index								
Friends from same class	-2.18	2.78	0.13	1.06	-2.18	2.78	-0.09	0.95
Friends from same sect	1	5	2.92	0.98	1	5	2.81	0.97
Friends from same sect	1	5	2.81	1.18	1	5	2.56	1.01
How often do you discuss when disagree	1	4	2.34	0.82	1	4	2.30	0.80
Sectarian identity index								
Willing to change sect	-2.74	1.54	0.09	0.97	-2.74	1.54	-0.07	1.02
Support sectarian political party	1	4	3.52	0.78	1	4	3.34	0.86
Support sectarian political party	0	1	0.48	0.50	0	1	0.47	0.50
Strong sectarian identity	1	7	4.41	2.01	1	7	4.22	2.13
Well connected to sectarian elite index								
Help from zaim	-1.15	2.25	-0.19	0.92	-1.15	2.25	0.11	1.03
Help from zaim	1	4	1.69	0.87	1	4	2.00	1.03
Help from religious leader	1	4	1.98	0.97	1	4	2.20	1.01
Strength of different identities								
Age group	1	7	4.49	1.94	1	7	4.57	1.85
Gender	1	7	5.38	1.87	1	7	4.88	1.83
Class	1	7	3.78	1.84	1	7	3.93	1.83
Occupation	1	7	4.26	1.91	1	7	4.88	1.77
Lebanese	1	7	5.48	1.88	1	7	5.68	1.78
Panel B: Implementtion variables								
Moderator 1 (of 2)	0	1	0.40	0.49	0	1	0.40	0.49
Groups with six participants	0	1	0.95	0.23	0	1	0.95	0.22
Knew people in group	0	3	0.06	0.29	0	5	0.11	0.52
Days until the municipal election	33	94	61.07	23.57	17	109	61.15	32.21

Table E.1: Summary Statistics for Control Variables

F Robustness Checks for Main Results

This appendix presents robustness checks for the main results. Columns three and four in Table F correspond to the results presented in Table 2 in the main text. The other columns show robustness of those results to the inclusion/exclusion of control variables, to the use of alternative weights to account for unequal treatment assignment probabilities (corresponding to weights used for the ‘smaller’ and ‘bigger’ strata described in Appendix A), and to the use of block fixed effects instead of IPW for the ‘smaller’ strata.¹⁰ Table F shows that all main results are robust across specifications.

	Sample		Effect of mixed (versus same) class group					
			Smaller Strata			Bigger Strata		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Results for Women								
All women	-1330 (362)	-1332 (376)	-1374 (367)	-1383 (390)	-1285 (357)	-1548 (441)	-1310 (363)	-1327 (375)
	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.000
N	285	285	285	285	285	285	285	285
Panel B: Results for Men								
All men	738 (327)	767 (337)	912 (339)	946 (350)	743 (327)	774 (407)	802 (329)	835 (339)
	0.025	0.023	0.007	0.007	0.024	0.058	0.015	0.014
N	428	428	428	428	428	428	428	428
Controls	No	Yes	No	Yes	No	Yes	No	Yes
IPW	No	No	Yes	Yes	No	No	Yes	Yes
Fixed Effects	No	No	No	No	Yes	Yes	No	No

Tables present coefficients, standard errors, and p-values from two-tailed tests for separate regressions for men and women.

Table F.1: Robustness Checks

¹⁰For bigger strata probabilities or assignment are equal across all blocks.

G Robustness and Additional Analysis for the Cross-Cutting Experiment

The results presented in the main text show that class differences strengthen cooperation but only among cosectarian men; class differences undermine cooperation among regardless of the sectarian composition of the group. As can be seen in Table G.1, the results are highly robust to the inclusion of controls to correct for chance imbalance (see Appendix B).

Table G.1: Contributions by Class and Sectarian Composition (With Controls)

	Men	Women
Panel A: Regression Results		
Mixed-sect (same-class) (B1)	330 (453) 0.467	113 (604) 0.852
Mixed-class (same-sect) (B2)	1708 (467) 0.000	-1086 (534) 0.043
Interaction (B3)	-1533 (683) 0.025	-597 (712) 0.402
Control mean	1904 (1575) 0.227	1834 (1773) 0.302
Panel B: Marginal Effects		
Mixed-sect (in mixed-class)	-1203 (510) 0.019	-484 (444) 0.276
Mixed-class (in mixed-sect)	174 (508) 0.732	-1683 (521) 0.001
N	428	285

Notes: Table reports coefficients, standard errors in parentheses, and p-values from two-sided tests. The regressions incorporate weights that correct for unequal treatment assignment probabilities across strata. * $p < .10$, ** $p < .05$, *** $p < .01$.

We also examine the extent to which these patterns are driven by class. Additional analysis in Table G.2 indicates that these results are driven almost entirely by the behavior of rich women. This pattern could be most consistent with the idea that, in male dominated societies, rich women try to differentiate themselves from poor women in order to attain status, which results in class-bias (see the longer discussion in Appendix H). It is also interesting to note that, while class differences appear to result in less cooperation in mixed-sect environments among poor women, this result is actually driven primarily by strong cooperation among women in mixed-sect, same-class environments. This underscores the fact that sect and class differences do have different effects on poor and rich women.

Table G.2: Contributions by Class and Sectarian Composition

Panel A: Poor Women					Panel B: Rich Women				
		Sect Composition					Sect Composition		
		Same	Mixed	<i>Diff</i>			Same	Mixed	<i>Diff</i>
Class	Same	3184	4476	1292*	Class	Same	4699	4252	-447
	Mixed	3325	2898	-427		Mixed	2676	2204	-472
	<i>Diff</i>	141	-1577**	-1719*		<i>Diff</i>	-2023**	-2049***	-25
Panel C: Poor Men					Panel D: Rich Men				
		Sect Composition					Sect Composition		
		Same	Mixed	<i>Diff</i>			Same	Mixed	<i>Diff</i>
Class	Same	2358	3353	996	Class	Same	3525	3193	-332
	Mixed	4249	3266	-983		Mixed	4916	3645	-1271*
	<i>Diff</i>	1892***	-87	-1979**		<i>Diff</i>	1391**	453	-938

Notes: Table shows mean contributions in each of the four experimental arms as well as tests of the differences between arms. Regressions to test differences incorporate weights that correct for unequal treatment assignment probabilities across strata and do not include controls. * $p < .10$, ** $p < .05$, *** $p < .01$.

H Additional Mechanism Analysis

The results presented in the main text show that women in mixed-class groups cooperated significantly less than those in same-class groups while men cooperated substantially more, highlighting that this pattern is particular to women. We also show that not all social differences among women have the same effect: the negative effect on cooperation is pronounced for class, but not for sectarian, differences. These results raise important questions, which we investigate below, about why women cooperate less than men in mixed class groups and why class differences undermine women’s cooperation more than sectarian differences.

While the main text explores the possibility that women engage in less cross-class cooperation than men due to the absence of pressures arising from sectarian competition over resources, this appendix considers three other possible explanations as to why women cooperate less than men in mixed class groups. These mechanisms could also help to explain why we see less cross-class cooperation among non-cosectarian women than among non-cosectarian men. Specifically, it could be that women are more uncertain about how other women will behave in mixed-class settings; are more prone to class bias related to status-seeking; or are more distrustful due to contested views of the appropriate role for women in society. While our study was not designed to examine these mechanisms, we do so to the best of our abilities.

Uncertainty. First, it is possible that women contribute less in mixed-class groups because of greater uncertainty over how other women will behave in such settings. Contribution decisions in public goods games can be conditional on expectations of what others will contribute (Fischbacher, Gächter and Fehr, 2001; Kocher et al., 2008). Such expectations, however, are based on real life interactions and experiences. It could be that Lebanese women have more economically homogeneous social networks and fewer opportunities for cross-class cooperation than men, for instance because they are less likely to participate in the labor force or hold jobs that allow for cross-class interaction (El Feki, Heilman and Barker, 2017). Fewer social interactions among women from different classes could result in less-developed norms of social behavior and greater uncertainty over how other women will behave in cross-class settings, resulting in lower contributions. This explanation is consistent with evidence that expectations about norms of cooperation are often stronger within familiar groups (Koopmans and Rebers, 2009).

Status-seeking and class-bias. A second possible explanation centers on class bias, especially ‘elitism’ in the behavior of upper-class women. In Lebanon and elsewhere, upper-class women are often accused of being elitist and self-serving rather than acting on behalf of women more broadly (Tamale, 1999). Evidence from the American politics literature demonstrates that women representatives who enjoy status benefits in a male-dominated political arena are less likely to help other women, potentially due to fear that doing so would dilute their own status (Kanthak and Krause, 2010, 2011). Thus, it could be that upper-class women are motivated to differentiate themselves from lower-class women to protect their privileged status in male-dominated societies. The fact that rich women cooperated even less than poor women in mixed-class groups could reflect such out-class bias.¹¹ Conversely, since men already belong to the *de facto* high status group in male-dominated societies, their efforts to gain status could take other forms. For instance, lower class men could contribute more in mixed-class settings to win the approval of higher status (wealthier)

¹¹It is also possible that status-seeking could motivate upper class to try to differentiate themselves from lower class men as well, although we are unable to ascertain this since we do not have mixed-gender groups in the experiment.

men (Wilkinson and Pickett, 2017). Conversely, higher contributions by upper-class men might reflect a desire to enhance their status through ‘competitive altruism’ and showing that they can provide for the group even at personal expense (Hardy and Vugt, 2006). In sum, the different ways that women and men seek status in male-dominated societies could help to explain why women contribute less, and men more, in mixed-class settings.

Class differences in views of gender identity and roles. Third, it is plausible that rich and poor women diverge in their views of what the role of women in society should be, resulting in distrust and less cooperation in mixed-class settings. The significant changes in women’s access to higher education and jobs in many countries in recent decades has been accompanied by debates *among women* over whether women should play more or less traditional roles in society. In Lebanon and elsewhere, well-educated, professional women have advanced as a result of their labor force participation to a far greater extent than women in low-paying positions (Salameh, 2014; Milkman, 2017; Brenner and Luce, 2006); upper-class women also typically hold more egalitarian and less traditional views (Ceyhan, 2017; El Feki, Heilman and Barker, 2017). The fact that rich and poor women cooperate less in mixed-class groups could thus reflect distrust or antagonism rooted in contested outlooks of women’s place and purpose in society. This is analogous to the argument in Klar (2018), who finds that partisan-based (rather than class-based) differences in gender identity are an important source of distrust among women in the United States. In contrast, the norms and expectations surrounding men’s roles could simply be more settled in male-dominated societies, resulting in fewer obstacles to gender-based cooperation across class lines.

We present preliminary evidence to assess the plausibility of these three explanations for our findings. To evaluate the role of both uncertainty and class-bias, we use a question from a self-administered survey completed before the public goods game that captures the extent to which participants’ real-world social networks are heterogeneous or homogeneous in their economic class.¹² A homogeneous network could proxy for uncertainty *or* in-class bias insofar as those with less diverse networks might have fewer opportunities for cross-class interactions or be more biased against individuals from other classes (and thus select into more homogeneous networks). We regard as support for either explanation evidence that the negative effects of being in a mixed-class group were greater for women with homogeneous real-world networks.

The results reported in Appendix Table H.1 show that being in a mixed-class group undermined cooperation for all women participants on average but that these effects were indeed especially big for those with homogeneous social networks. This indicates that both uncertainty and in-class bias could be telling an important part—but not all—of the story for women. We also find that being in a mixed-class group increased cooperation for all men but that the heterogeneous effects differ for those who were rich or poor. For poor men, being in a mixed class group induced greater cooperation among those with homogeneous social networks, a result that is more consistent with status-seeking motivations. For rich men, being in a mixed class group resulted in more cooperation among those with heterogeneous networks, which could indicate less uncertainty or more experience with ‘competitive altruism’ (Hardy and Vugt, 2006). All in all, these results suggest that uncertainty and status-seeking (with its implications for class-bias) could help to explain the differential results in cross-class cooperation for women and men.

¹²About 25 percent of our female participants, and 21 percent of our male participants, have social networks that are primarily homogeneous in terms of class, indicating that mixed-class interactions are likely common.

Table H.1: Heterogeneous Effects of Mixed-Class Treatment by Type of Social Network

	All		Poor Only		Rich Only	
	Same class <i>mean</i>	Mixed class <i>b/se/p</i>	Same class <i>mean</i>	Mixed class <i>b/se/p</i>	Same class <i>mean</i>	Mixed class <i>b/se/p</i>
Panel A: Results for Women						
Almost all/most network from other class	4277	-1077 (687) 0.118	3966	-436 (916) 0.635	4662	-1826 (1047) 0.084
Some network from other class	3503	-781 (540) 0.149	3317	-378 (693) 0.586	3648	-1139 (802) 0.158
A few/almost none in network from other class	5014	-2716 (742) 0.000	4340	-1545 (1063) 0.148	5758	-3937 (1021) 0.000
Panel B: Results for Men						
Almost all/most friends from other class	3341	733 (594) 0.218	3645	166 (1006) 0.869	3190	1095 (758) 0.150
Some network from other class	3103	886 (520) 0.089	2635	686 (696) 0.325	3686	950 (761) 0.213
A few/almost none in network from other class	2766	1208 (710) 0.090	2590	1844 (906) 0.043	3091	80 (1136) 0.944

Robust standard errors in parentheses. *P*-values are from two-sided tests. All models incorporate weights that correct for unequal treatment assignment probabilities across strata and the full set of control variables.

Finally, to investigate whether different views of gender identity might be driving mistrust among women in mixed-class groups, we use survey measures that capture both the strength of gender identity and support for civil marriage, a long-debated policy proposal in Lebanon that is often viewed as a challenge to the traditional role of religion and as a way of granting women more rights and protections under the law (Zuhur, 2002). Following on Klar (2018), we expect class differences in gender identity to undermine cooperation only when gender is both salient and such differences in opinion exist.

We do find support for the salience of women’s gender identity using a survey measure in which participants ranked a list of possible identities from strongest to weakest. The results in H.3 show that almost 42 percent of women participants ranked gender as their most important identity (compared to 30 percent for men); 71 percent of women listed it as in their top three identities. Moreover, gender identity was equally important for both rich and poor women.

Yet, our data does not suggest that rich and poor women differ in their support for civil marriage; in a regression of support for civil marriage on socio-economic class (and control variables) for women (see column 3 of Table H.3), the coefficient on class is zero. (Interestingly, upper class men are, however, significantly more likely to support civil marriage than lower class men). While we cannot rule out the possibility that class differences in other aspects of gender identity undermined women’s cooperation, our analysis provides little support for this mechanism.

Table H.2: Summary Statistics on Strength of Gender Identity

	Gender is most important ID	Gender is top three ID
	<i>mean/(s.e.)</i>	<i>mean/(s.e.)</i>
Panel A: Women		
All	0.42 (0.03)	0.71 (0.03)
Poor	0.43 (0.04)	0.76 (0.04)
Rich	0.40 (0.04)	0.66 (0.04)
Panel B: Men		
All	0.29 (0.02)	0.61 (0.03)
Poor	0.29 (0.03)	0.58 (0.04)
Rich	0.29 (0.03)	0.65 (0.04)

Estimates incorporate weights that correct for unequal treatment assignment probabilities across strata.

The third and fourth columns in examine the association between class and support for civil marriage for both women and men. Civil marriage is widely viewed as a policy that would advance women’s rights and protections under the law and as such has been supported by the women’s movement in Lebanon (Zuhur, 2002). Under current law, women’s access to economic, political, and social equality under the law varies depending on which of the various religious sects they be-

long to, since this determines which of the many religious courts they must enter for disputes related to marriage or family law. There is far more variation in the regulations across religious courts for women compared to men, which makes them doubly-disadvantaged by the current arrangement.

Our measure for support for civil marriage comes from the post-treatment survey used to collect outcome data for the main study described in Appendix A.1. As such, it reflects the effects of being assigned to a same- or mixed-class and same- or mixed-sect discussion (which we control for in our analysis). However, this is the only data from this study available to us that allows us to examine whether support for civil marriage varies by class, consistent with the notion that there could be class differences among women in gender identity, what it means to be a woman, and what the role of women in society should be. The regression results presented in Table H.3 show, however, that there is no association between wealth and support for civil marriage for women. (Interestingly, upper class men are, however, significantly more likely to support civil marriage than lower class men). All in all, while we cannot rule out the possibility that class differences in other aspects of gender identity undermined women’s cooperation, our analysis does not provide direct support for this mechanism.

In sum, the fact that women cooperate less—and men cooperate more—in mixed-class groups could reflect notable differences in their lived experiences with cross-class interactions; their efforts to attain or maintain social status result in class-bias; or the extent to which there are contested views of gender roles and identity *among women*. While we present tentative evidence to support the plausibility of at least the first two explanations, there is clearly a need for further research into *why* class differences affect cooperation among women as well as among men.

Table H.3: Association between Class and Support for Civil Marriage by Gender

	Strength of Gender ID		Support for Civil Marriage	
	Women <i>b/se</i>	Men <i>b/se</i>	Women <i>b/se</i>	Men <i>b/se</i>
Rich	0.10 (0.09)	0.03 (0.06)	0.00 (0.09)	0.15** (0.07)
Age	0.00 (0.00)	0.00 (0.00)	-0.01** (0.00)	0.00 (0.00)
Married	-0.10 (0.10)	-0.07 (0.05)	-0.08 (0.09)	-0.01 (0.06)
Post-secondary education	-0.12 (0.10)	-0.14* (0.07)	-0.03 (0.10)	-0.01 (0.07)
Shia	-0.15* (0.08)	0.08 (0.06)	-0.24*** (0.07)	-0.18*** (0.06)
Sunni	0.02 (0.08)	0.08 (0.05)	-0.34*** (0.07)	-0.23*** (0.06)
Student	0.15 (0.14)	0.05 (0.07)	-0.26** (0.12)	0.05 (0.07)
Homemaker	0.03 (0.08)	0.07 (0.12)	-0.04 (0.08)	0.32* (0.18)
Sectarian prejudice index	-0.03 (0.04)	0.03 (0.03)	-0.14*** (0.03)	-0.03 (0.03)
Political activity index	-0.06 (0.04)	0.00 (0.03)	0.03 (0.03)	0.03 (0.02)
Homogeneity of social networks index	0.02 (0.03)	0.00 (0.02)	0.03 (0.03)	-0.04 (0.03)
How often disagree	-0.02 (0.04)	0.02 (0.03)	0.05 (0.04)	0.00 (0.03)
Sectarian ID index	-0.01 (0.04)	0.03 (0.02)	-0.08** (0.03)	-0.09*** (0.03)
Connectedness to sectarian leaders	0.03 (0.04)	0.03 (0.03)	-0.04 (0.04)	-0.03 (0.03)
Strength of age ID	0.07*** (0.02)	0.08*** (0.01)	-0.01 (0.02)	0.00 (0.01)
Strength of gender ID	-	-	0.03* (0.02)	0.00 (0.01)
Strength of econ ID	-0.01 (0.02)	0.01 (0.01)	0.01 (0.02)	-0.01 (0.01)
Strength of Lebanese ID	-0.01 (0.02)	0.01 (0.01)	-0.03** (0.02)	-0.01 (0.01)
Strength of occupational ID	-0.02 (0.02)	0.02 (0.01)	0.00 (0.02)	0.03** (0.01)
Mixed-class treatment	0.01 (0.06)	0.08 (0.05)	-0.01 (0.06)	-0.04 (0.05)
Mixed-sect treatment	-0.08 (0.07)	0.04 (0.04)	0.16*** (0.06)	0.01 (0.05)
Constant	0.40 (0.27)	-0.45** (0.20)	0.86*** (0.23)	0.37* (0.20)
N	285	428	285	428

Robust standard errors in parentheses. *P*-values are from two-sided tests. All models incorporate weights that correct for unequal treatment assignment probabilities across strata and the full set of control variables.

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