

Supplementary Materials for Intrinsic Social Incentives in State and Non-State Armed Groups

Michael J. Gilligan, Prabin Khadka and Cyrus Samii*

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*Professor New York University (mg5@nyu.edu), Assistant Professor University of Essex (prabin.khadka@essex.ac.uk) Associate Professor New York University (cds2083@nyu.edu). We would like to thank Binod Paudel, Fabrice Gouzo and Kamaran Mohammed for invaluable research assistance. We thank the Folke Bernadotte Academy, Sweden for its financial support of this research. The views expressed herein are not necessarily those of the Government of Sweden

A Formal Presentation of the Argument

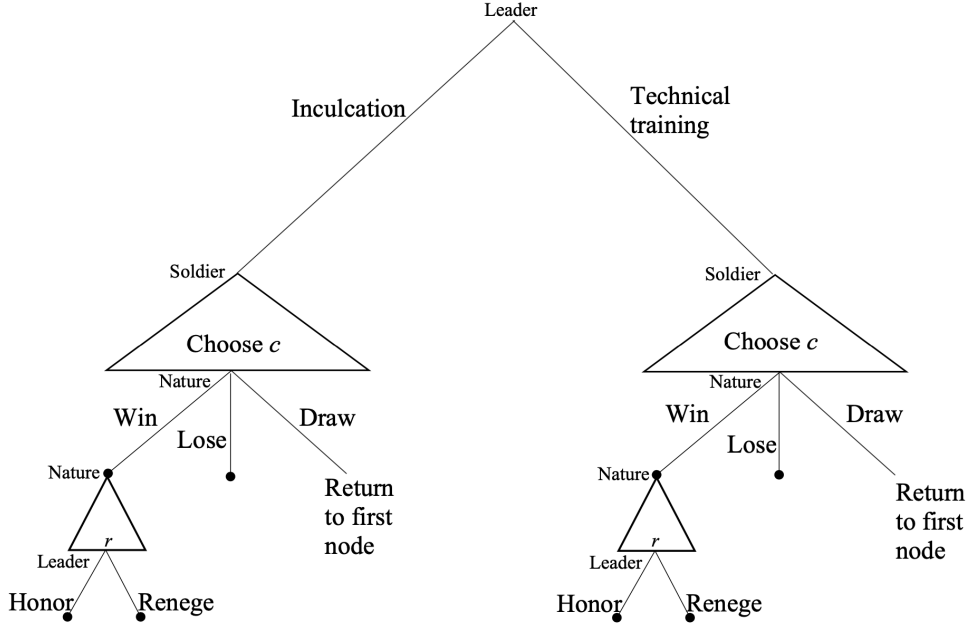
Whether NSAG members are more pro-group than SAG members is an empirical question. We want to be as clear as we can about the process we think is at work in our data, so, in this appendix, we describe our hypothesized data-generating process in somewhat formal terms. Our hypothesis is that NSAGs will compensate for the lower credibility of their promises by spending more time on inculcation than SAGs do. Therefore NSAG soldiers will receive higher immediate intrinsic social rewards and punishments for contributing effort to the group and as such will contribute more to the group *ceteris paribus*. We use a simple game to clarify our argument. The game is similar in spirit to Lidow (2016)'s excellent theoretical analysis of insurgent leader credibility in the context of the Liberian civil war, although he focuses on pro-group preferences among leaders, while we focus on the inculcation of pro-group motivations among recruits. This game is not intended to paint a completely realistic picture of the incentives inside armed groups but only to describe, as clearly as we can, the process that we hypothesize is generating our data. The purpose of the model is not to prove theorem but to illustrate the process that we think is generating our data.

We discuss the interaction between a military leader and a representative soldier. The game is repeated indefinitely until the group either wins or loses the war. The stage game is illustrated in Figure A1. There are three possible outcomes at the conclusion of each stage of the game: the group can win in which case the game ends, the group can lose the war in which case the game ends or the group can draw in which case the game repeats from the first node of the stage game. At the first node of the game the military leader chooses how to allocate a marginal amount of training of a representative soldier. For simplicity we will assume the soldiers are identical in the parameters of the model. The leader can choose Inculcation or Technical training. The amount of technical training and socialization are cumulative so the total amount of socialization that the soldier possesses in period t is $sT = \sum_{i=1}^t \iota_i$ where t is the time-period index, and ι_i is an indicator equal to one in periods when the group inculcates and zero otherwise. The total amount of technical training the soldier has received by time T , then, is $\tau_T = \sum_{i=1}^T 1 - \iota_i$. After the leader selects the type of training, the soldier chooses their contribution $c_t \in \mathbb{R}^+$, knowing that their choice cannot be observed. We suppress temporal subscripts where doing so is not confusing.

The probability that the group wins (loses) the war is a strictly increasing (decreasing) function of c_t and τ_t . If the group neither wins nor loses the war in period t we say that the group *draws* in that period. Call the probability that the group wins in period t $p_t(\cdot)$ in periods where the group chooses to inculcate and $\pi_t(\cdot)$ in periods where the group chooses technical training. Call the probability that the group loses in period t $\ell_t(c, \tau)$ in periods where the group chooses to inculcate and $\lambda_t(c, \tau)$ in periods where the group chooses technical training. For ease of exposition call the probability that the group draws in period t $d_t = 1 - p_t - \ell_t$ in periods where the group chooses to inculcate and $\delta_t = 1 - \pi_t - \lambda_t(c, \tau)$ in periods where the group chooses technical training.

The leader has promised the soldier pensions or other rewards with a value of one if the group wins the war. The leader's value of winning the war is $V > 1$. The payoff of losing the war is zero for both players. If the group loses the war the leader does not have to pay the promised rewards. Both players are risk neutral. In each period t , the soldier receives social utility $S(st, c_t)$. The soldier's per period social payoff, $S(\cdot)$, is an increasing function of the soldier's accumulated socialization and their contribution in that period. To avoid corner solutions we assume $S(\cdot)$ is concave in c_t . Define $U_t = p_{t+1} - c_{t+1} + S_{t+1}(\cdot) + \phi d_{t+1}(p_{t+2} - c_{t+2} + S_{t+2}(\cdot) + \phi^2 d_{t+2}(\dots)$ and $\Upsilon_t = \pi_{t+1} - c_{t+1} + S_{t+1}(\cdot) + \phi \delta_{t+1}(\pi_{t+2} - c_{t+2} + S_{t+2}(\cdot) + \phi \delta_{t+2}(\dots)$, where ϕ is the inter-temporal

Figure A1: Game form of the stage game

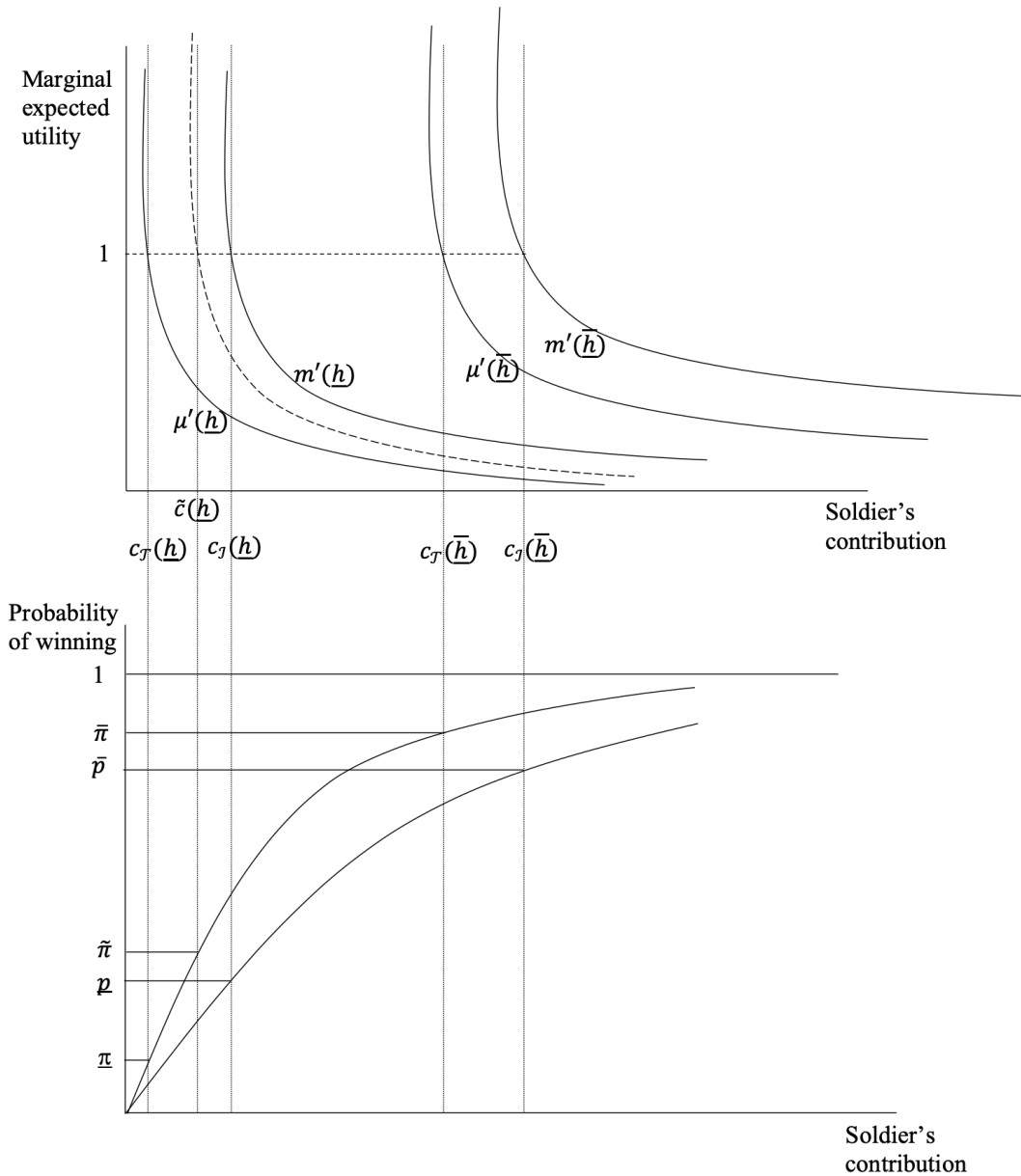


discount factor.

The leader will only have to keep its promise of a post-war reward to some subset of their cadres. Think of this subset as the group's minimum winning coalition or, alternatively, the set of soldiers to whom the group is legally required to keep its promises. Define $r \in [0, 1]$ to be the share of soldiers to whom the leader honors their promises; thus r is also the probability that the leader will honor their promises to an individual soldier. The players do not know the value of r unless and until the group wins the war, but they do know $f(r)$, the distribution of r . Define $h = \int_0^1 r f(r) dr$, which is the expected probability that the leader will honor their promises to an individual soldier. The soldier's choice of effort affects the probability of winning the war. Nature chooses the winner of the war based on that probability. If the group wins the war nature chooses r and the leader decides probabilistically whether to Honor or Renege on their promise to the soldier. We assume $m(c_t, \tau_t) = hp_t + d_t U_t$ and $\mu(c_t, \tau_t) = h\pi_t + \delta_t Y_t$ are strictly increasing and concave in c_t and τ_t .

The soldier will choose their contribution to maximize their utility: $m(\cdot) - c_t$ or $\mu(\cdot) - c_t$ depending on whether the leader chose to inculcate or technically train in period t . To do so they set $m'(\cdot)$ or $\mu'(\cdot)$ equal to one (depending on the leader's training decision). In Figure A2 we present illustrative soldier contributions for each of the two possible training decisions and for each of two levels of leaders credibility: \underline{h} when the leader has low credibility and \bar{h} when the leader has higher credibility. In the example, when the leader has low credibility, the soldier will offer a contribution like $c_{\mathcal{J}}(\underline{h})$ when the leader chooses to technically train but will contribute $c_{\mathcal{J}}(\underline{h})$ when the leader inculcates. When the leader has high credibility, by contrast, the soldier will offer a contribution like $c_{\mathcal{J}}(\bar{h})$ when the leader chooses to technically train but will contribute $c_{\mathcal{J}}(\bar{h})$ when the leader inculcates. These contribution levels will result in probabilities of winning of $\bar{\pi}$, \bar{p} , $\underline{\pi}$ and \underline{p} respectively as shown in the lower panel.

Figure A2: Illustrative training and contribution equilibria



High-credibility leaders elicit greater contributions from soldiers than low-credibility leaders do, all else equal, because the soldier's marginal expected payoff if the group wins is higher due to the leader's higher probability of keeping their promise. The leader chooses the training regimen that maximizes the group's probability of winning the war. Since that probability is concave in the soldier's contribution and high-credibility leaders already elicit larger contributions than low-credibility leaders, investing in inculcation produces a smaller increase in the probability of winning for high-credibility leaders. Therefore there are cases where a high-credibility leader

will choose technical training but a low credibility leader will not but there are no cases where a low-credibility leader will choose technical training and a high-credibility leader will not *ceteris paribus*. For the reasons mentioned in the main text, we hypothesize that NSAG leader's promises will have lower credibility than SAGs leader's promise so there may be cases where NSAG leaders will choose inculcation and SAG leaders do not, but not vice versa.

A second reason that SAG leaders may choose technical training relatively more frequently is that they obtain higher marginal returns from technical training because they possess more technical equipment. If this were the case the low credibility marginal utility curve might not be the one marked $\mu'(h)$ but instead something like the dashed downward sloping curve marked $\tilde{\mu}'(h)$ in the upper panel of Figure A2. The soldier's equilibrium contribution level would then be $\tilde{c}(h)$ and the group's concomitant probability of winning would be $\tilde{\pi}$. In such a case the group would choose technical training even though its credibility (h) was just as low as the NSAGs.

B List of laboratory sessions

Table A1: List of laboratory sessions

Who	Where	When
Maoists	Kathmandu	10/6/12
Maoists	Kathmandu	3/20/13
Maoists	Kathmandu	3/23/13
Maoists	Dang	9/8/12
Maoists	Dang	9/8/12
Maoists	Jhapa Birtamod	3/30/13
Maoists	Jhapa Birtamod	3/31/13
Maoists	Jhapa Birtamod	3/31/13
Maoists	Jhapa Kerkha	4/1/13
Maoists	Jhapa Kerkha	4/1/13
Maoists	Gorkha	4/22/13
Maoists	Gorkha	4/23/13
Maoists	Gorkha	4/23/13
Maoists	Chitwan	7/25/2012
Maoists	Chitwan	7/25/2012
Maoists	Butwal	8/2/12
Maoists	Butwal	8/2/12
HQ guards	Abidjan	8/12/15
Marines	Marine base	8/12/15
FRCI infantry	Training center Bengerville	8/13/15
FRCI infantry	New Akoido camp Abidjan	9/1/15
FRCI infantry	Old Akoido camp Abidjan	9/1/15
Gbagbo militias	Yapougon	7/19/2015
Gbagbo militias	Yapougon	7/22/15
Gbagbo militias	Yapougon	7/23/15
Gbagbo militias	Yapougon	8/2/15
Gbagbo militias	Yapougon	8/2/15
Peshmerga	KDP party hall Makhmur	20/5/2016
Peshmerga	FOB Makhmur	20/5/2016
Peshmerga	KDP Training center	23/5/2016
Peshmerga	Training center	23/5/2016
Peshmerga	Training center	23/5/2016
Peshmerga	Training center	23/5/2016
Peshmerga	Training center	28/5/2016
Peshmerga	Training center	28/5/2016
Peshmerga	Training center	29/5/2016
Peshmerga	Training center	29/5/2016
Peshmerga	Training center	6/6/16
Peshmerga	Training center	6/6/16
Peshmerga	PUK party hall Erbil	27/7/2016
Peshmerga	KDP party hall Erbil	1/8/16
Peshmerga	Socialist party hall Erbil	9/8/16
Peshmerga	PUK party hall Erbil	16/8/2016
Peshmerga	KDP party hall Erbil	1/9/16

C Summary statistics for Maoist sample

Table A2 shows summary statistics for our PLA (NSAG) sample in Nepal. The age range is between 21 and 47. The data were collected in 2013, which implies that these individuals were between 5 and 30 at the very onset of the conflict in 1996 and between 9 and 35 at the time of major mobilization in 2001. Years of experience as a Maoist combatant ranges from 6 years to 17, where the latter is the maximum possible given the onset of the conflict in 1996. Education levels are indicated according to a 4-point scale of attainment: 1=less than junior secondary school, 2= junior secondary school, 3=high school, 4=university or more. The mean is about 2, and indeed this is modal category (41% of the sample). This is in contrast to father’s education levels, which are predominately category 1 (82% of the sample). The sample varies in terms of caste and ethnic background, with the modal category being that of “Janajati,” the colloquial designation for Nepal’s indigenous peoples (Jha, 2003). It is an umbrella term for a variety of indigenous peoples some of which, in particular the Kham Magars of central Nepal, are closely associated with the Maoist movement (de Sales, 2003). Soldiers vary in their combat experience, as indicated by the variation in number of times wounded and whether they had soldiers under their command killed. A majority (67%) of those responding indicated having had soldiers killed, but the response rate was slightly lower for this question (about 84%) possibly out of consideration for the dead.

Table A2: Summary statistics for PLA Soldier Sample

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	28.79	4.26	21	47	202
Years in PLA	9.84	1.95	6	17	204
Ed. level	2.12	0.89	1	4	204
Father’s ed. level	1.28	0.70	1	4	203
Brahmin	0.16	0.37	0	1	202
Chhettri	0.19	0.40	0	1	202
Newar	0.01	0.12	0	1	202
Dalit	0.10	0.30	0	1	202
Janajati	0.53	0.50	0	1	202
No. times wounded	1.50	1.76	0	15	204
Any soldiers killed?	0.67	0.47	0	1	171
Rs. sent, pay-it-forward	47.79	29.50	0	100	204
Rs. sent, PG	38.53	28.73	0	100	204

Table A3 shows the distribution of highest ranks achieved in our the sample. Officers are over-represented because another project that we were conducting at the same time required subjects to be officers. Still a few non-commissioned officers were accidentally included in the sample. Our selection of officers reduces concerns about using a convenience sample: the number of officers in each of the cantonments we worked with was so small that we used every officer in each cantonment unless an officer was missing from the cantonment for idiosyncratic reasons. The bulk of our sample attained ranks between platoon commander to battalion vice-commander following the PLA rank system, corresponding, approximately, to 1st Lieutenant to just above Captain based on the US Army ranks system. The concentration of our sample at this middle tier is to be expected, given promotion for the many early entrants that appear in our sample.

Table A3: Ranks in PLA Soldier Sample

Code	Rank	US Army Equiv.	N	Sample %
15	Supreme Commander		0	0
14	Deputy Commander	General	0	0
13	Division Commander	Major General	0	0
12	Division Vice-Commander		1	0.49
11	Brigade Commander	Colonel	0	0
10	Brigade Vice-Commander		3	1.47
9	Battalion Commander	Lt. Colonel	14	6.86
8	Battalion Vice-Commander		25	12.25
7	Company Commander	Captain	46	22.55
6	Company Vice-Commander		51	25.00
5	Platoon Commander	1st Lieutenant	40	19.61
4	Platoon Vice-Commander		8	3.92
3	Section Commander	Sergeant	10	4.90
2	Section Vice-Commander		2	0.98
1	Front Guard Leader	Corporal	2	0.98
0	Member	Private	2	0.98

D Civilian placebo test

Table A4: Summary statistics for Civilian-Only Groups

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	31.75	9.89	18	50	120
Edu. level	2.17	1.02	1	4	120
Father's edu. level	1.33	0.72	1	4	120
Brahmin	0.19	0.40	0	1	120
Chhettri	0.61	0.49	0	1	120
Newar	0.04	0.20	0	1	120
Dalit	0.04	0.20	0	1	120
Janajati	0.12	0.32	0	1	120
Rs. sent, recip.	56.08	27.20	0	100	120
Rs. sent, PG	61.58	31.25	0	100	120

E Descriptive Statistics from Ivory Coast

E.1 Summary statistics

Tables A5 and A6 show summary statistics for our army/marines (SAG) and militia (NSAG) samples in Ivory Coast. The age ranges are 23-53 and 21-48, respectively. The data were collected in 2015-6, which implies that these individuals were between 10 and 41 at the very onset of the initial outbreak of the civil war in 2002. Years of experience as a combatant ranges from 1 years to 32 for members of the army/marines between 3 and 13 for members of the militia. The analysis drops members of the army/marines who had joined prior to 2002. Education levels are indicated according to a 5-point scale of attainment: 1=less than primary school, 2= primary school, 3=junior secondary school, 4=high school, 5=university or more. The mean is about 3 for the army/marines and closer to 2 for the militia. This difference is not surprising given that educational requirements for entry into the army or marines. The survey also asked whether respondents fathers were literate. The majority indicated that their fathers were, with the average among the militia (0.78) being higher than for the army/marines (0.60). Ethnic and religious backgrounds vary, with modal ethnic affiliation being Akan for both subsamples and modal religion being Christian, which again is unsurprising given that southern Christians formed the core of the Gbagbo-aligned political movements. The combatants vary in their combat experience, as indicated by the variation in the number of combatant engagements and number of times wounded. Both of these are higher for militia members.

Table A5: Ivory Coast Army and Marines (SAG) Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	34.63	7.77	23	53	60
Abidjan born	0.25	0.44	0	1	60
Literate father	0.60	0.49	0	1	60
Education scale	2.88	1.50	0	5	60
Akan	0.35	0.48	0	1	60
Krou	0.23	0.43	0	1	60
Malinke	0.10	0.30	0	1	60
Mande	0.07	0.25	0	1	60
Voltaic	0.12	0.32	0	1	60
Christian	0.73	0.45	0	1	60
Muslim	0.23	0.43	0	1	60
Female	0.03	0.18	0	1	60
Years in mvt.	11.82	8.77	1	32	60
Rank in Increasing Order	3.55	2.17	1	11	60
No. of combat engagements	0.77	1.49	0	9	60
Times wounded	0.05	0.22	0	1	60
CFAs sent, pay-it-fwd.	364.17	137.50	0	500	60
CFAs sent, PG	375.83	153.63	0	500	60

Table A6: Ivory Coast Militia (NSAG) Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	29.66	4.98	21	48	50
Abidjan born	0.04	0.20	0	1	50
Literate father	0.78	0.42	0	1	50
Education scale	2.26	1.51	0	5	50
Akan	0.40	0.49	0	1	50
Krou	0.18	0.39	0	1	50
Malinke	0.04	0.20	0	1	50
Mande	0.14	0.35	0	1	50
Voltaic	0.12	0.33	0	1	50
Christian	0.78	0.42	0	1	50
Muslim	0.16	0.37	0	1	50
Female	0	0	0	0	50
Years in mvt.	6.18	2.90	3	13	50
Rank in Increasing Order	2.14	1.26	1	6	50
No. of combat engagements	2.84	2.28	0	12	50
Times wounded	0.42	0.73	0	3	50
CFAs sent, pay-it-fwd.	362.00	146.93	0	500	50
CFAs sent, PG	399.00	116.71	100	500	50

E.2 Covariate differences

Table A7 examines mean differences for covariates across the army/marine (SAG) and militia (NSAG) subsamples from the Ivory Coast. The tables shows ordinary-least-squares regression estimates of the variable listed in the column headers on a dichotomous variable equal to one if the subject was in a SAG and zero otherwise. The constant is the mean for militia subjects, and the coefficient on “Army (SAG)” shows the difference in means across the two groups. The regression analysis in the main text includes results that control for all of these covariates.

Table A7: Covariate balance for SAG and NSAG (militia) subjects in Ivory Coast

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Age	Abidj. born	Lit. father	Educ. scale	Akan	Krou	Malinke	Mande	Voltaic	Christian	Muslim	Female
Army (SAG)	4.97*** (1.23)	0.21*** (0.06)	-0.18** (0.09)	0.62** (0.29)	-0.05 (0.09)	0.05 (0.08)	0.06 (0.05)	-0.07 (0.06)	-0.00 (0.06)	-0.05 (0.08)	0.07 (0.08)	0.03 (0.02)
Constant	29.66*** (0.70)	0.04 (0.03)	0.78*** (0.06)	2.30*** (0.22)	0.40*** (0.07)	0.18*** (0.05)	0.04 (0.03)	0.14*** (0.05)	0.12** (0.05)	0.78*** (0.06)	0.16*** (0.05)	-0.00 (.)
Observations	110	110	110	110	110	110	110	110	110	110	110	110
R^2	0.12	0.08	0.04	0.04	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.02

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

E.3 Wartime experiences

Table shows how measures of wartime experiences differed for army/marine (SAG) versus militia (NSAG) subjects. Because these outcomes are endogenous to SAG versus NSAG status, these variables provide hints on possible mechanisms to explain the differences that we estimate for SAGs versus NSAGs in the analysis that appears in the main text.

Table A8: Differences in wartime experiences for SAG and NSAG (militia) subjects in Ivory Coast

	(1)	(2)	(3)	(4)
	Years in mvt.	Rank in Increasing Order	No. of combat engagements	Times wounded
Army (SAG)	5.64*** (1.20)	1.43*** (0.33)	-2.37*** (0.37)	-0.37*** (0.11)
Constant	6.18*** (0.41)	2.12*** (0.18)	3.14*** (0.31)	0.42*** (0.10)
Observations	110	110	110	110
R^2	0.15	0.13	0.29	0.11

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

F Descriptive Statistics from Kurdistan

F.1 Summary statistics

Tables A9, A10 and A11 show summary statistics for our Peshmerga sample from Kurdistan in Iraq. naturally the mean age, as expected, for the pre-2003 joiners is higher, 51.42, while for those who joined after 2003 but before 2014 is 25.83 and the mean for post 2013 joiners is 24.71. Education levels are indicated according to a 5-point scale of attainment: 1=less than primary school, 2= primary school, 3=junior secondary school, 4=high school, 5=university or more. The education level mean for post 2013 joiners is 3.24 which is higher than the other two groups. Unsurprisingly 65% of post 2013 joiners had literate fathers as opposed to the other groups with 46%. We have not included religion and ethnicity because, except for one Peshmerga who reported being Shia, the rest were Sunnis. All our subjects were Kurds. More than 60% of our subjects in all three groups reported that their fathers had served as a Peshmerga. The pre-joiners whose father served in the Iraqi National Army was 12% as opposed to 25% in the other two groups. Times wounded and friends killed in combat are the actual reported numbers and unsurprisingly the pre-2003 joiners report a much higher number than the other two groups, indicative of this particular group's exposure to combat. Game average is the residuals from the regression of the average of the two games (two payments) regressed on a dummy variable of whether subjects received 5000 dinars or 2500 dinars max for each game. Since the first five sessions only received a maximum of 2500 dinars for each game, we took this approach.

Table A9: Peshmerga pre-2003 joiners Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	51.42	10.56	31	80	78
Erbil born	0.32	0.47	0	1	78
Education scale	2.64	1.5	0	5	78
Literate father	0.46	0.5	0	1	78
Years served	31.53	9.44	13	52	78
Rank in Increasing order	8.4	3.1	1	13	78
Father served in Peshmerga	0.62	0.49	0	1	78
Father served in Iraqi Army	0.12	0.32	0	1	78
Times wounded	1	1.33	0	7	78
Friends killed in combat	25.83	27.47	0	150	78
Dinars sent, pay-it-fwd	3560.9	1434.83	0	5000	78
Dinars sent, PG	3743.59	1401.51	0	5000	78
Game average (resid)	719.93	1185.85	-3128.47	1871.53	78

Table A10: Peshmerga post-2003 and pre-2013 joiners Summary statistics

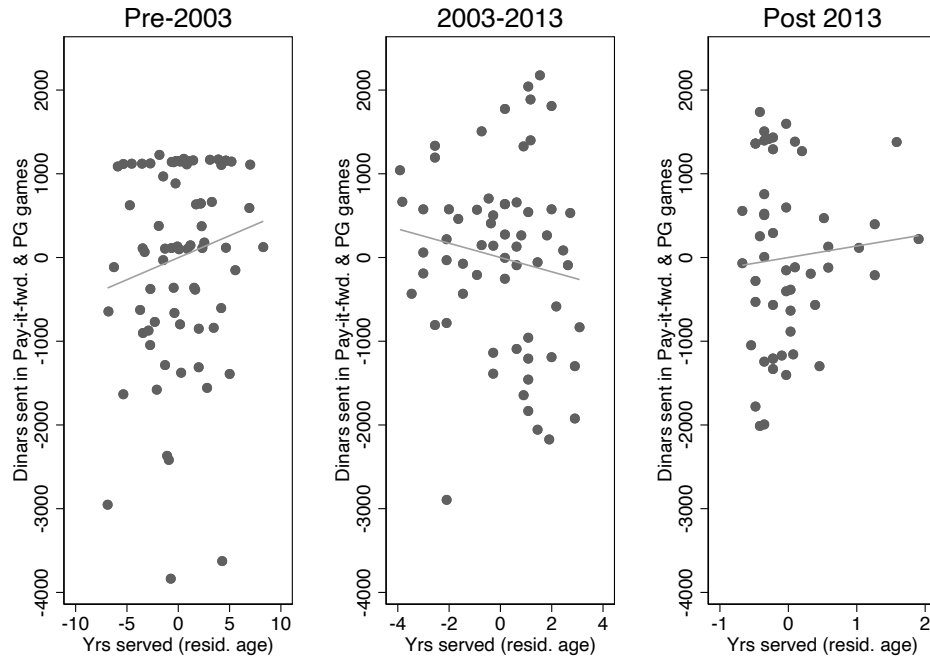
Variable	Mean	Std. Dev.	Min.	Max.	N
Age	25.83	4.54	17	38	63
Erbil born	0.22	0.42	0	1	63
Education scale	2.84	1.74	0	5	63
Literate father	0.46	0.5	0	1	63
Years served	6.38	2.77	3	11	63
Rank in Increasing order	3.75	2	1	7	63
Father served in Peshmerga	0.68	0.47	0	1	63
Father served in Iraqi Army	0.25	0.44	0	1	63
Times wounded	0.21	0.57	0	3	63
Friends killed in combat	5.42	8.19	0	30	62
Dinars sent, pay-it-fwd	2134.92	1521.24	0	5000	63
Dinars sent, PG	2583.33	1675.85	250	5000	63
Game average (resid)	-327.77	1263.78	-2878.47	1871.53	63

Table A11: Peshmerga post-2013 joiners Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Age	24.71	3.91	18	34	51
Erbil born	0.11	0.32	0	1	63
Education scale	3.24	1.81	0	5	51
Literate father	0.65	0.48	0	1	51
Years served	0.33	0.62	0	2	51
Rank in Increasing order	1.12	0.62	1	5	51
Father served in Peshmerga	0.73	0.45	0	1	51
Father served in Iraqi Army	0.25	0.44	0	1	51
Times wounded	0	0	0	0	51
Friends killed in combat	0.43	1.19	0	5	51
Dinars sent, pay-it-fwd	1944.44	1270.35	500	5000	63
Dinars sent, PG	1904.76	1120.22	0	5000	63
Game average (resid)	-563.58	999.33	-2628.47	1121.53	63

F.2 Peshmerga graph, removing Pre-2003 outlier

Figure A3: Lab contribution and years served in Peshmerga for various cohorts



F.3 Covariate differences

Table A12, A13 and A14 examines mean differences for covariates across our three different groups of Peshmerga subjects. The tables shows ordinary-least-squares regression estimates of the variable listed in the column headers on a dichotomous variable equal to one if the subject was in one of the three groups and zero otherwise. The constant is the mean of subjects not belonging to that group. The coefficient on each of the three groups shows the difference in means across any two groups. The regression analysis in the main text includes results that control for all of these covariates. Columns (1) to (6) are six variables related to pre-joining characteristics where as columns (7) to (10) show how four measures of wartime experiences differ among these three groups. Because these outcomes are endogenous to each type of group a Peshmerga belongs to, these variables provide hints on possible mechanisms to explain the differences that we estimate for different time frames in our analyses. Table A15 shows the distribution of ranks achieved in our Peshmerga sample. 50% of our sample are below the rank of officers, normally those who always take up front line combat roles.

Table A12: Pre-treatment balance (cols. 1-6) and post-treatment outcomes (cols. 7-10) for Pre-2003 Peshmerga joiners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Age	Erb. born	Edu.scale	Lit.fath.	Pesh.fath.	Irq.Arm.fath.	Yrs.serv.	Rank	Times wounded	Friends killed
Pre-2003	26.10*** (1.26)	0.15** (0.06)	-0.38 (0.24)	-0.08 (0.07)	-0.09 (0.07)	-0.14** (0.05)	27.85*** (1.12)	5.83*** (0.40)	0.89*** (0.16)	22.67*** (3.17)
Constant	25.32*** (0.40)	0.17*** (0.03)	3.02*** (0.17)	0.54*** (0.05)	0.70*** (0.04)	0.25*** (0.04)	3.68*** (0.34)	2.57*** (0.19)	0.11*** (0.04)	3.17*** (0.62)
Observations	192	204	192	192	192	192	192	192	192	191
R^2	0.75	0.03	0.01	0.01	0.01	0.03	0.81	0.57	0.19	0.27

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A13: Pre-treatment balance (cols. 1-6) and post-treatment outcomes (cols. 7-10) for 2004-14 Peshmerga joiners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Age	Erb. born	Edu.scale	Lit.fath.	Pesh.fath.	Irq.Arm.fath.	Yrs.serv.	Rank	Times wounded	Friends killed
Post 2003 & pre-2014	-15.04*** (1.49)	-0.00 (0.06)	-0.03 (0.26)	-0.07 (0.08)	0.02 (0.07)	0.08 (0.06)	-12.81*** (1.54)	-1.77*** (0.46)	-0.40*** (0.12)	-10.37*** (2.41)
Constant	40.86*** (1.38)	0.23*** (0.04)	2.88*** (0.15)	0.53*** (0.04)	0.66*** (0.04)	0.17*** (0.03)	19.19*** (1.50)	5.52*** (0.38)	0.60*** (0.10)	15.79*** (2.18)
Observations	192	204	192	192	192	192	192	192	192	191
R^2	0.23	0.00	0.00	0.00	0.00	0.01	0.16	0.05	0.03	0.05

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A14: Pre-treatment balance (cols. 1-6) and post-treatment outcomes (cols. 7-10) for post-2013 Peshmerga joiners

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Age	Erb. born	Edu.scale	Lit.fath.	Pesh.fath.	Irq.Arm.fath.	Yrs.serv.	Rank	Times wounded	Friends killed
Post 2013	-15.28*** (1.40)	-0.17*** (0.05)	0.50* (0.29)	0.19** (0.08)	0.08 (0.07)	0.08 (0.07)	-19.96*** (1.23)	-5.20*** (0.31)	-0.65*** (0.10)	-16.36*** (1.99)
Constant	39.99*** (1.29)	0.28*** (0.04)	2.73*** (0.14)	0.46*** (0.04)	0.65*** (0.04)	0.18*** (0.03)	20.29*** (1.22)	6.32*** (0.30)	0.65*** (0.10)	16.79*** (1.99)
Observations	192	204	192	192	192	192	192	192	192	191
R^2	0.21	0.03	0.02	0.03	0.01	0.01	0.34	0.37	0.08	0.12

Standard errors in parentheses, * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A15: Ranks in Peshmerga Sample

Code	Rank	US Army Equiv.	N	Sample %
13	Lt. General	Lt. General	1	0.52
12	Major General	Major General	13	6.77
11	Brigadier	Brigadier	8	4.17
10	Colonel	Colonel	19	9.90
9	Lt. Colonel	Lt. Colonel	0	0
8	Major	Major	8	4.17
7	Captain	Captain	14	7.29
6	1st Lieutenant	1st Lieutenant	15	7.81
5	Lieutenant	Lieutenant	18	9.38
4	Warrant Officer	Warrant Officer	4	2.08
3	Corporal first class	Sergeant	25	13.02
2	Lance Corporal	Lance Corporal	1	0.52
1	Private	Private	66	34.38

G Ethical considerations

Informed and voluntary consent of research participants and others directly engaged by the research process, including continuing consent if needed

Participation in the research was completely voluntary. Before subjects participated in this research a local facilitator read a consent statement to them in their native language: Nepali in Nepal, French in the Ivory Coast and Kurdish or Arabic Kurdistan depending on the subject's native language. We asked subjects to give their consent verbally. We did not want them to sign the consent form to further insure them of their anonymity. We used a standard consent form recommended by the IRB at New York University. We vetted the consent form with local experts in each locale to ensure that our subjects understood it.

Deceptive or covert research should be avoided No deception was involved in this study. Nonetheless, we held a discussion and debriefing with subjects after the games were finished in order to explain the rationale for the research, to assess subjects' perceptions of the activities, and to address subjects' questions.

Harm (traumatization, social, economic or physical) should be avoided, minimized when avoidance is not possible, and research suspended if excessive We did not anticipate any risks of harm beyond those encountered in everyday life and indeed none occurred. Nonetheless, we made provisions to suspend the research and refer subjects to counselors had they experienced any emotional distress in the research, but this never occurred.

The confidentiality of participant identities, or, in some settings, the higher standard of anonymity At no point in the data gathering process were subjects' names recorded or even asked. We identified subjects only with a code that we randomly assigned at the start of the session. Knowing their identity was unnecessary for this research.

Compromising the integrity of broad political processes either at the time of the research process or on publication without the consent of those directly engaged by the research process should be avoided The research had no impact on broader political processes beyond what any survey of a few hundred respondents in each locale would have done. The text of our survey neither encouraged nor discouraged our subjects to take any actions in the lab or in the real world.

Review by relevant ethics boards to approve the research protocol, confirm exempt status, or confirm that the research is Not Human Subjects Research (NHSR) (Note that this also includes local review when required by host community or host country.

The research in each of the three venues underwent a thorough review by the ethics board at New York University. None of the host countries require ethics board review but as part of our review at our home institution we had to obtain affidavits that stated our work complied with norms and laws in the countries where we worked.

Awareness of relevant laws and regulations governing research and related activities.

As mentioned above we consulted with local experts, facilitators and government officials to

ensure that our work did not violate any laws or norms in the countries in which we worked.

Any other ethical challenges or perceived ethical challenges related to research with human participants, how you addressed them, and whether how you addressed them might have adversely affected participants.

This research did not pose any other ethical challenges. It did however employ survey and survey experimental techniques. Here are our answers to the extra questions pertaining to that form of research:

whether participants were paid and the extent to which payments were fair in both local and global contexts;

We conducted lab-in-the-field measurement activities. Subjects earned money for participating in these activities depending on their actions and those of the other subjects in the lab. These payments were fair both locally and globally and were judged to be so by our IRB and local experts.

whether the participant pool was diverse, and in what ways

Our research required a very specific participant pool: ex-combatant officers in Nepal and the Ivory Coast and some current members of the military in the Ivory Coast and Iraqi Kurdistan. In Kurdistan we expanded our sample criteria to include non-commissioned officers. Within that pool all potential subjects we met were invited to participate and we did not place any restrictions on who could participate other than their age (we required them to be over 18). The subject pool is quite diverse in terms of age composition and gender. In one case, the Ivory Coast, there simply were very few women in the sample frame.

whether the participant pool included or was comprised mainly of members of groups we should consider vulnerable or marginalized and if so, how you addressed that

None of the groups we studied are vulnerable or marginalized. The ex-combatants in our study were all participating in legal ex-combatant reintegration programs. As such they were all covered by programs and statutes that granted them legal status. They possessed legal autonomy and were free to engage in this research voluntarily without pressure of any sort either to participate or refrain from participation.

whether the research differentially benefited or harmed particular groups.

None of the participants in our study were harmed differentially or otherwise. Participants earned differential monetary amounts from their activities in the lab only insofar as their actions in the lab determined. All participants had equal opportunities to earn the same amounts of money from these activities and we made sure that our subjects were well aware of the rules of the games they were playing and how those would translate into monetary payoffs.

H Main Results Full Model Estimates

To preserve space in the main text, the main results (Tables 1, 2, and 3) do not present estimates for coefficients on the control variables. For full transparency, these full results are presented here.

Table A16: Table 1 full model results

	(1) No covars.	(2) w/ covars.
Years in PLA	4.25** (1.93)	6.19*** (2.19)
Age		-1.07 (1.01)
Father's ed.: Completed junior secondary		18.16* (9.36)
Father's ed.: Completed secondary		-7.63 (14.43)
Father's ed.: Completed university		-11.48 (24.10)
Caste: Brahmin		35.62 (39.03)
Caste: Chhetri		22.96 (37.62)
Caste: Newar		6.36 (57.15)
Caste: Dalit		18.40 (39.26)
Caste: Janajati		28.09 (37.67)
Urban place of birth		-2.02 (11.35)
Missing indicator: age		6.53 (50.83)
Missing indicator: caste		0.00 (0.00)
Missing indicator: urban		-3.14 (13.36)
Constant	44.48** (18.81)	33.62 (48.34)
Observations	204	203

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

OLS estimates; outcome variable is combined amount sent in games, in rupees.

One observation dropped because of missing data on father's education.

Omitted category for father's education is "did not complete junior secondary."

Omitted category for caste is "No caste reported."

Fixed effect estimates for the 17 sessions are omitted from the "w/ covars." column because of space limitations.

Table A17: Table 2 full model results

	(1) No covars.	(2) w/ covars.
Years in mvt.	26.50* (11.27)	23.47* (12.07)
Army (SAG) X yrs. in mvt.	-26.14* (11.69)	-25.34* (12.56)
Army (SAG)	138.49 (97.73)	141.50 (100.99)
Age		0.91 (5.20)
Abidj. born		38.13 (56.21)
Lit. father		-19.41 (46.68)
Years of edu.		-2.59 (13.65)
Akan		11.67 (83.16)
Krou		11.35 (86.77)
Malinke		128.33 (117.23)
Mande		63.21 (91.44)
Voltaic		23.24 (82.44)
Christian		68.99 (91.76)
Muslim		-61.02 (123.35)
Female		-152.93 (119.22)
Constant	597.24** (86.75)	541.10** (202.54)
Observations	110	110

One-sided tests: * p < 0.05, ** p < 0.01

OLS estimates; outcome variable is combined amount sent in games, in CFA.

Table A18: Table 3 full model results

	(1)	(2)	(3)
	Full sample	Pre-2013 only	Full sample
Years in mvt.	53.23* (31.34)	51.41* (30.66)	52.86* (31.40)
Post-2003 X years in mvt.	-21.59 (46.00)	-141.68* (76.83)	-139.85* (76.07)
Post-2003	-3364.62** (1079.60)	-4938.08** (1351.76)	-4871.14** (1344.67)
Age	-38.38 (31.65)	-36.97 (30.93)	-38.12 (31.73)
AgeXPost-2003	109.71** (42.55)	200.39** (61.61)	197.78** (60.76)
Born Erbil	404.73* (191.96)	351.54 (212.87)	389.03* (190.19)
Father's years of edu.	171.64 (165.32)	-54.70 (193.35)	129.37 (165.24)
Post-2013 X years in mvt.			218.90 (203.92)
Post-2013			3068.89* (1327.38)
AgeXPost-2013			-153.52** (62.32)
Constant	806.37 (858.57)	912.92 (844.40)	828.97 (861.06)
Observations	192	141	192
Wild cluster bootstrap one-sided p-value (NSAG)	0.02	0.03	0.02
Wild cluster bootstrap one-sided p-value (SAG-NSAG)			

One-sided tests: * $p < 0.05$, ** $p < 0.01$

OLS estimates; outcome variable is combined amount sent in games, in dinars.

References

- de Sales, Anne. 2003. The Kham Magar Country, Nepal: Between Ethnic Claims and Maoism. In *Understanding the Maoist Movement in Nepal*, ed. Deepak Thapa. Kathmandu: Martin Chautari.
- Jha, Hari Bansh. 2003. *Janajatis in Nepal*. Geneva: International Labor Office.
- Lidow, Nicholai Hart. 2016. *Violent Order: Understanding Rebel Governance through Liberia's Civil War*. Cambridge: Cambridge University Press.