

Appendices

This file contains the Appendices for Ferree, Dowd, Jung, and Gibson “Election Ink and Turnout in a Partial Democracy”

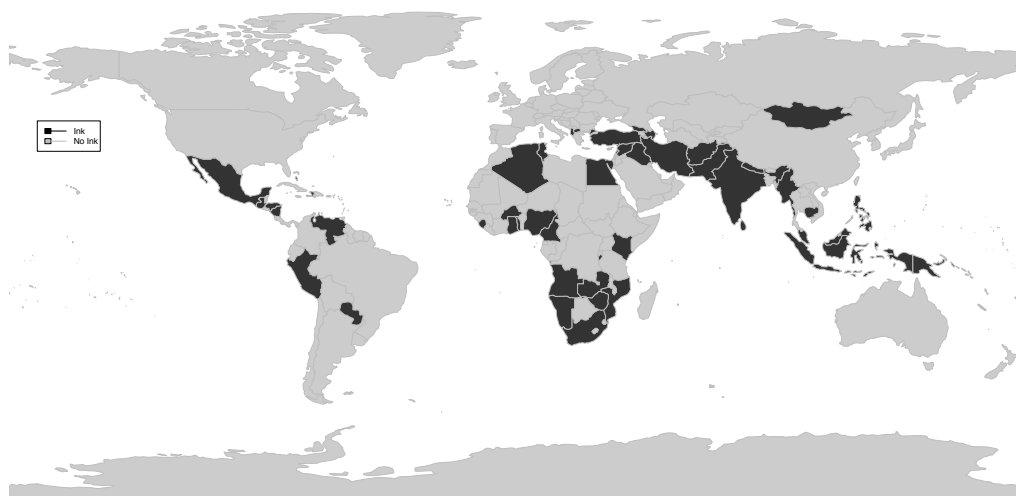


Figure A-1: Countries with confirmed use of election ink

SAMPLING, RANDOMIZATION, AND BALANCE

Most houses in Kawempe do not have conventional street addresses. We therefore relied on a “random walk” methodology to randomize selection of households. Within each parish, enumerators selected households and individuals according to the following pattern: enumerators started from a landmark designated by their supervisor, walked a set distance in a predetermined direction (determined by the date and day of the week), and identified a “block” of four consecutive houses.³⁷ They approached the first house in the block and asked to speak with someone over the age of eighteen. If they found someone of the appropriate age, and that individual was a registered voter and willing to take the survey, the enumerator delivered the designated treatment. If the enumerator could not locate a registered voter willing to take the survey, the enumerator moved on to the second house in the block and repeated the procedure. If the second household did not contain a willing registered voter, the enumerator moved on to the third house in the block and so on until the treatment was delivered to the first available and willing registered voter. Once the enumerator found a registered voter and treated him or her, the enumerator skipped the rest of the houses in the block, skipped an additional two houses (to reduce the likelihood of contamination), and then began the procedure again at the next block of four houses.³⁸ In addition to delivering the survey and treatment, the enumerators described and mapped the location of each block and the treated house within it.³⁹ This procedure ensured randomization across treatment arms, but not a representative sample of Kawempe. Our sample is biased toward people who were home during the period in which we delivered the survey and were willing to participate.

³⁷Supervisors were given large maps of their parishes and instructed to pick landmarks that were dispersed within the parish, to police the borders of parishes, and to ensure that enumerators did not intersect one another as they visited houses.

³⁸We assigned treatments to blocks rather than households to improve uptake. We found an individual willing to participate in virtually all designated blocks.

³⁹Enumerators were not told they would be returning to the house in the future, only that their supervisor would be conducting intensive spot checks for quality, a standard practice.

Table A-1 evaluates balance across eighteen pre-treatment covariates.⁴⁰ We achieved balance on almost all variables, with significant differences appearing only for the age and marital status variables (which are highly correlated). Respondents who received the reminder treatment were somewhat younger and less likely to be married than those who received the mobile phone treatment. Recipients of the ink prime treatment were also younger than recipients of the mobile phone survey, but the skew was milder and less significant. We thoroughly evaluate the sensitivity of all results to the age imbalance (see section on robustness, below); we do not believe it challenges the validity of our findings.

TABLE A-1: Balance Verification: p-values from Equality Tests

	Cell phone survey =Turnout Reminder =Ink Prime	Cell Phone Survey =Turnout Reminder	Turnout Reminder =Ink Prime	Cell phone survey =Ink Prime
Education ^a	0.2140	0.2367	0.0862	0.5877
Interview in English ^b	0.6111	0.3445	0.8303	0.4656
Female	0.7175	0.4277	0.5757	0.8179
Married	0.0560	0.0190	0.1051	0.4728
Has children	0.1799	0.1268	0.0942	0.8756
Age ^c	0.0203	0.0070	0.4636	0.0498
Owens mobile phone	0.6243	0.3699	0.4403	0.9041
Stand alone fenced housing	0.6319	0.3688	0.8690	0.4638
Stand alone housing	0.7770	0.5038	0.8977	0.5899
Small block housing	0.7757	0.4781	0.6778	0.7708
Apartment	0.6953	0.8629	0.4188	0.5221
Informal housing	0.5823	0.4625	0.3147	0.7823
Party Display	0.4175	0.7694	0.2072	0.3294
Museveni campaigned ^d	0.9509	0.8511	0.7525	0.8971
Registered voters, 2006 ^e	0.9686	0.9988	0.8266	0.8269
Museveni votes, 2006 ^e	0.9823	0.9991	0.8699	0.8702
Margin of victory, 2006 ^e	0.9759	0.9989	0.8480	0.8483
Turnout 2006 ^e	0.9951	0.9995	0.9315	0.9316

a: The education variable had eight categories, where lowest was no education and highest was university or post-university. Our mean respondent had an education level between 4 (secondary not completed) and 5 (secondary completed).

b: Respondents were given a choice of completing the survey in English or Luganda.

c: The age variable had eight categories, where lowest was age 18-24 and highest was 60+. Our mean respondent was aged between 2 (25-30) and 3 (31-36).

d: Campaign activity by Museveni in 2011, measured at the parish level.

e: Measured at the parish level.

ROBUSTNESS CHECKS

Our randomization produced balance across a large number of covariates, but was somewhat imbalanced on age (especially for the reminder treatment) and marital status (see Table A-1). Younger people were slightly more likely to get the ink prime treatment relative to the mobile phone control, and quite a bit more likely to get the reminder treatment relative to the mobile phone control. A similar pattern pertains for marital status. Because marital status is highly correlated with age, and age is causally prior to marital status, we focus our robustness checks on age.

In order for the imbalance in age across treatment groups to generate the observed treatment effects, age would have to be positively correlated with having an inked finger. We looked for evidence of a correlation between age and

⁴⁰Displayed across all combinations of treatment status.

finger status by examining a group of non-treated survey respondents interviewed in the days immediately following the election.⁴¹ Reassuringly, age is uncorrelated with finger status in this group.

Through close inspection, we determined that the imbalance in age originates in three of the ten parishes in the study. When these parishes are removed, we have balance across all of the covariates in Table A-1. To further probe robustness, we dropped the three problematic parishes and replicated our analysis. Results were as strong or stronger in the limited sample⁴² and education and age continue to interact with the inking treatment, with less education and youth being associated with larger negative responses to the inking. We therefore believe it unlikely that the modest imbalance in our sample confounds our findings.

The full experimental design also had a true control: households we selected but did not visit prior to the election when we selected and visited the treatment households. We visited these control households after the election and delivered the endline survey to them. We did not achieve balance in this control group, however, even though they were part of the initial randomization. We believe the set of people home and available to answer the survey was different after the election versus before. Thus, even though household selection was random, a different sample was present within households, inducing imbalance in the true control. For these reasons, we do not use the true control households in our analysis.

⁴¹Respondents were interviewed at the same time and in the same fashion as the three treatment groups.

⁴²The change in probability for not being inked in the full sample is .037, with 95 percent confidence intervals spanning from -.007 to .082. In the reduced sample of balanced parishes it is .049, with confidence intervals spanning from -.015 to .120.

TABLE A-2: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Finger Status	1.460	0.683	1	3	1137
T1 (Turnout Remainder)	0.330	0.470	0	1	1137
T2 (Ink Prime)	0.330	0.470	0	1	1137
Bwaise II (Parish 1)	0.252	0.435	0	1	1129
Bwaise III (Parish 2)	0.084	0.277	0	1	1129
Makerere I (Parish 3)	0.083	0.275	0	1	1129
Makerere II (Parish 4)	0.085	0.278	0	1	1129
Makerere III (Parish 5)	0.074	0.262	0	1	1129
Mulago I (Parish 6)	0.084	0.277	0	1	1129
Mulago II (Parish 7)	0.085	0.278	0	1	1129
Mulago III (Parish 8)	0.084	0.277	0	1	1129
Muluka II - Makerere University (Parish 9)	0.086	0.28	0	1	1129
Education	4.419	1.868	1	8	1099
Age	2.310	1.752	1	8	1098
Female = 1	0.630	0.484	0	1	1137
Gifts important	0.705	0.456	0	1	1143
Visible display of NRM affiliation	0.231	0.422	0	1	1143
Pentacostal	0.105	0.307	0	1	1043
Mutoro	0.027	0.163	0	1	1100
Muganda	0.595	0.491	0	1	1100
Interview in English	0.405	0.491	0	1	1137
Married = 1	0.447	0.497	0	1	1137
Has children = 1	0.532	0.499	0	1	1137
Owens mobile phone	0.820	0.385	0	1	1137
Stand alone fenced housing	0.142	0.350	0	1	1143
Stand alone housing	0.072	0.258	0	1	1143
Small block housing	0.168	0.374	0	1	1143
Apartment	0.237	0.425	0	1	1143
Informal housing	0.376	0.485	0	1	1143
Visible display of party affiliation	0.377	0.485	0	1	1137
Museveni campaigned in area in 2011	0.180	0.3823	0	1	1129
Catholic	0.360	0.480	0	1	1043
CUG	0.286	0.452	0	1	1043
Muslim	0.203	0.403	0	1	1043

BROADER EVIDENCE OF TURNOUT DISCOURAGEMENT IN THIS ELECTION

If Museveni did attempt to discourage opposition voters from going to the polls, we would expect to see a negative correlation between opposition support and turnout in the 2011 election. We also would expect opposition support to correlate with use of violence and intimidation. To test these expectations, we turn to data collected in a pre-election survey in January and February 2011 (Callen et al. 2016).

These data are from 1100 randomly selected polling stations from a sampling frame that included all polling stations in Uganda and then randomly sampled five registered voters around each station. The survey included questions on intended vote choice, religious identity, education level, and development variables like whether the household was electrified, respondent employment, income, and newspaper readership. It also asked respondents if they thought violence was likely around their polling station in the upcoming election. By averaging across respondents for each polling station, we get a coarse but unbiased measure of intended vote choice and expectations of election violence at the polling station

level, as well as numerous socioeconomic control variables. We matched the survey data to actual polling station turnout in the 2011 election.

Table A-3 shows the results of four models. The dependent variable in columns 1-2 is expected violence at the polling station; the dependent variable in columns 3-4 is polling station turnout in 2011. In all models, we control for religious and socioeconomic variables; in Models 2 and 4 we control for region fixed effects. We find that the level of opposition support positively correlates with expectations of violence, with borderline statistical significance. We also find that areas with higher numbers of opposition support had lower turnout levels. These results are consistent with turnout discouragement of opposition voters during the election.

TABLE A-3: OLS Models of Expected Violence and Turnout at the Polling Station Level for the 2011 Ugandan Elections

	Violence Anticipated		Turnout in 2011	
	(1)	(2)	(3)	(4)
Opposition	0.06*	0.03	-0.06***	-0.04***
	(1.75)	(0.66)	(-6.36)	(-4.17)
Catholic	0.03	0.05	0.03***	0.03***
	(0.85)	(0.95)	(3.07)	(2.86)
Muslim	-0.09	-0.13*	-0.07***	-0.04***
	(-1.50)	(-1.92)	(-4.68)	(-3.07)
Education	0.08***	0.07***	0.00	-0.00***
	(7.23)	(4.53)	(1.53)	(-2.60)
Electrified	-0.04	-0.02	-0.00	-0.01
	(-0.91)	(-0.32)	(-0.28)	(-0.84)
Employment	0.03	-0.02	-0.02***	-0.01*
	(0.86)	(-0.40)	(2.10)	(-1.13)
Mean Income	-0.00	-0.00	-0.00***	-0.00*
	(-0.87)	(-0.86)	(-2.81)	(-1.67)
Newspaper	-0.00	0.02	-0.00	-0.00
	(-0.14)	(0.73)	(-0.39)	(-1.02)
Constant	0.19***	0.770***	0.65***	0.78***
	(4.20)	(3.35)	(62.03)	(61.72)
Observations	1095	538	588	538
R^2	0.0639	0.0680	0.1613	0.2817
Region Fixed Effects	No	Yes	No	Yes

Note: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

t statistics based on robust standard errors in parentheses. All variables except 2011 polling station turnout come from an original pre-election survey of registered voters conducted in January 2011. For more details on the survey see Callen et al. (2016).

TABLE A-4: Believes Neighbors Know Turnout Choice

<i>Dependent variable:</i>		
<i>Believes Neighbors Know Turnout Choice</i>		
	(1)	(2)
	Including All Parishes	Excluding Some Parishes
Turnout reminder (T1)	0.03 (0.74)	0.01 (0.28)
Ink prime (T2)	0.07** (2.00)	0.09** (2.20)
Constant	0.6*** (11.48)	0.6*** (10.93)
Parish Fixed Effects	Yes	Yes
Observations	1129	654

Notes: *t* statistics in parentheses.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE A-5: Full Model with Education, Age, Gender, and Parish Fixed Effects

	(1)		(2)	
	Baseline		Age, Education & Gender	
	Finger Status:		Finger Status:	
	Inked	Concealed	Inked	Concealed
Turnout reminder (T1)	-0.06 (-0.23)	-0.31 (-1.08)	0.11 (0.42)	-0.16 (-0.52)
Ink prime (T2)	-0.38 (-1.55)	-0.40 (-1.47)	-2.48** (-2.43)	-2.64** (-2.29)
Education ^a			-0.04 (-0.51)	-0.17 (-1.75)
Education ^a * Ink prime			0.31*** (2.21)	0.36*** (2.168)
Age ^b			0.47*** (3.59)	0.32*** (2.20)
Age ^b * Ink prime			0.56*** (2.03)	0.41 (1.38)
Female			0.24 (0.82)	-.73 (-2.16)
Female * Ink prime			-.68 (-1.39)	.04 (0.08)
Constant	1.15*** (3.70)	0.44 (1.23)	.20 (0.30)	1.23 (1.66)
Parish Fixed Effects	Yes		Yes	
Observations	1124		1031	

Notes: *t* statistics in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

a: The education variable had eight categories, where lowest was no education and highest was university or post-university. Our mean respondent had an education level between 4 (secondary not completed) and 5 (secondary completed).

b: Respondents were given a choice of completing the survey in English or Luganda.

TABLE A-6: Museveni Voters in Kampala

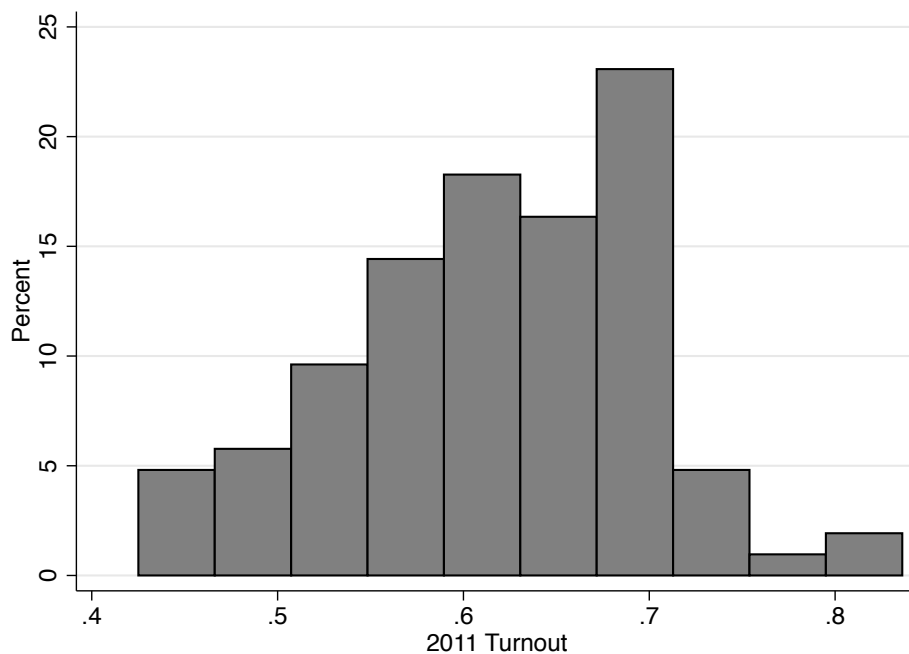
	Museveni Voter
Muganda	0.00758 (0.0349)
Mutoro	0.311*** (0.0875)
Munyankole	0.214*** (0.0555)
Age ^a	0.0281*** (0.00947)
Education ^b	-0.0155* (0.00908)
Woman	0.0787** (0.0328)
Catholic	-0.159** (0.0758)
CUG	-0.166** (0.0768)
Pentacostal	-0.0857 (0.0853)
Muslim	-0.161** (0.0789)
Constant	0.320*** (0.109)
Parish Fixed Effects	Yes
Observations	1,031
R-squared	0.096
Linear Model, Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

a: Age variable had eight levels.

b: The education variable had eight categories, where lowest was no education and highest was university or post-university. Our mean respondent had an education level between 4 (secondary not completed) and 5 (secondary completed).

Note: Respondents were given a choice of completing the survey in English or Luganda.

Figure A-2: 2011 Turnout by District



Data come from the Electoral Commission of Uganda. District level turnout calculated, the y axis displays the percent of districts with that turnout rate. The vertical line indicates the confirmed turnout rate in the non-representative experimental sample (the "Finger Inked" category).

ATTRITION

Using rare events logit to examine patterns in the attrition rate, we found treatment status was unrelated to the likelihood of attrition. We also checked the correlation between questions from the pre-election component of the experiment and their counterparts in the post-election component (gender and age) and a perfect match on gender and a correlation of .99 on age (dropping a small group of people who refused to answer the age question on the second round). We are therefore confident that we re-interviewed the correct individuals. For results, see Table A-7. We find no evidence that the slightly longer ink prime treatment was a source of attrition.

TABLE A-7: Attrition

	(1)	(2)
	Attrition	Attrition
Reminder	-0.97	-0.96
(T1)	(0.68)	(-1.39)
Ink prime	-0.29	-0.26
(T2)	(-.052)	(0.47)
Restricted Sample	No	Yes
Parish FE	No	Yes

Notes: Recontact refusal rate: 1.44%, Recontact failure rate: 0.7%, Total attrition 2.1%.

Logistic regression, omitted category is cell phone treatment t statistics in parentheses.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

TABLE A-8: Heterogeneous Ink Prime Treatment Effects for NRM Display

		<i>Finger Status:</i>		
		Finger Inked	Concealed	Finger Not Inked
<i>Visible NRM Display</i>				
No NRM		-.033	-.006	.040
Display		(-.11, .05)	(-.07, .06)	(-.02, .10)
NRM		-.028	-.014	.042
Display		(-.14, .08)	(-.11, .09)	(-.017, .11)

Note: Simulated from a multinomial logit model with parish fixed effects, N=1124. 95% confidence intervals in parentheses.

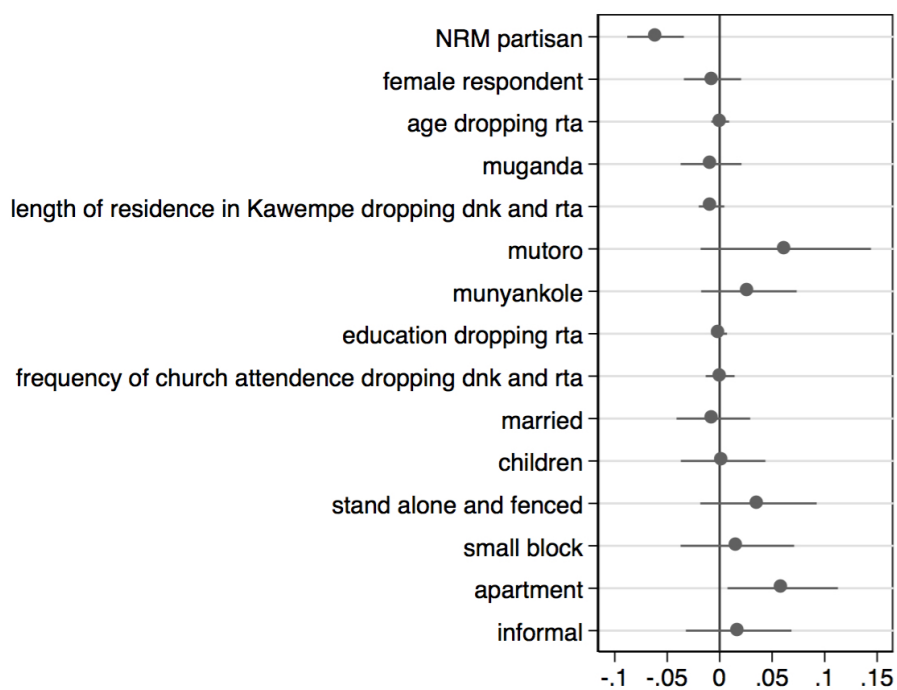


Figure A-3: Correlates of Concealers