Online Appendix for "Chiefs: Economic Development and Elite Control of Civil Society in Sierra Leone"

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Appendix A: Chiefdom dataset

Table A1 presents our basic dataset for each chiefdom, organized by district.

Appendix B: An alternative measure of the concentration of power

Table B1 presents results from a specification identical to the one presented in Table 2 of the paper using an alternative measure of the concentration of power. This measure is the number of times the family that has held the paramount chieftaincy most has done so (i.e., the maximum of the number of times any family has held the chieftaincy). The mean of this variable is 3.5. The results are very similar to those using the Herfindahl index.

Appendix C: Magnitude of potential bias

In column 10 of Table 3 in the paper, we conducted an exercise to estimate the magnitude of any bias that might arise from a correlation between the number of ruling families and exogenous determinants of development at the beginning of the 20th century. In this exercise, we generate a prediction for an outcome using district fixed effects and six geographic correlates of development at the turn of the century: distance to prominent trade routes in 1895, distance to coast, distance to 3 major towns, rivers and the railroad, and a dummy for the presence of mining permissions in the 1930s. Regressing this prediction on the log number of ruling families allows us to assess the correlation between the log number of ruling families and the exogenous component of the outcome, and provides an estimate of the magnitude of any omitted variable bias that might arise from this correlation.

Table 3 presented this exercise for literacy; in Table C1, we do this for an additional set of variables. As in Table 3, standard errors in these columns have been block bootstrapped at the chiefdom level to account for sampling error in the prediction of the outcome from the covariates; predicted literacy was estimated 500 times, drawing with replacement a sample of chiefdoms and all observations within them.

In column 1 of Table C1, for whether the individual respects authority, the effect of the log number of ruling families is equal to 0.000, far from the effect of -0.084 we estimate in column 2 of Table 8. Though the confidence interval does admit larger bias, even the lower bound of

a 95% confidence interval admits only an effect of -0.018, less than 1/4 of the effect found in Table 8. Similarly, in columns 2-4, the bias is very small—in particular, much smaller than the effects shown in Table 9.

Overall, these results suggest that although we cannot rule out some amount of omitted bias in our estimates, this bias could not be large enough to explain the effects we observe.

Appendix D: Literacy over time

Table D1 reports the coefficients plotted in Figure 4 of the paper. While individual level data are available from the 2004 census, only chiefdom cohort aggregates are available from the 1963 census. For consistency in this table and in Figure 4 we present results for cohorts observed in the 2004 census using aggregates as well. In addition, while in Table 4 individuals observed in the 2004 census are matched to chiefdoms based on chiefdom of birth, individuals in these tables are matched based on chiefdom of residence to ensure consistency with the 1963 census, which does not report education by chiefdom of birth.

Appendix E: Components of asset wealth, housing quality and social capital indicies

Here we present results for the individual outcomes comprising our mean effects indicies for asset wealth, housing quality and social capital. In Table E1, we present the constituents of our asset wealth index in columns 1-7, and the constituents of our housing quality index in columns 8-10. Though all are not significant, all are positive, and we are reassured that the few with particular salience in Sierra Leone, such as ownership of mobile phone, an umbrella and a radio, are significant and positive. Table E2 includes the social capital measures, in addition to a few measures of trust.

Finally, Panel A of Table E3 reports the correlations between our three indices and a few variables of particular interest. This table confirms that the three indices are only weakly correlated, and so capture different aspects of social capital. Panel B of Table E3 reports the correlations of chiefdom level averages of these variables with various development outcomes, showing that in our sample, development outcomes and measured social capital are generally weakly or negatively correlated.

Appendix F: The number of ruling families and rice ecologies

Rice farming in Sierra Leone is done on two types of land, lowland and upland. Lowland is broken into four categories: inland valley swamp, mangrove swamp, boli land, and riverrine area. In Table 7, we included dummies for each of these types of land as controls.

The distinction between lowland and upland is most relevant for productivity. In Table F1 we relate measures of the abundance of lowland land in a chiefdom to the log number of ruling families, and find no relationship. In column 1 we test for whether the log number of ruling families makes a household more or less likely to have a plot that is lowland. The estimated effect here is small and insignificant. In column 2 we test for whether the share of rice acreage that is lowland is different in chiefdoms with more families. Acreage shares were calculated by summing the area of all plots owned by households. We find an effect very close to zero.

Appendix G: Placebo tests

Given the modest size of the sample of chiefdoms in our datasets (149 in the census and NPS; 117 in the DHS) it is helpful to assess whether our results are still statistically significant under permutation-based p-values which do not rely on large sample asymptotics. To do this, we implement a Monte Carlo exercise using the data from the NPS and DHS household surveys in which we allocate placebo numbers of ruling families to chiefdoms. Placebos are drawn randomly from the empirical distribution of the number of ruling families. For each outcome, we calculate a p-value by comparing the estimated effect of the log placebo number of ruling families to the estimate calculated using the true data.

Formally, we undertake the following procedure K times. For each chiefdom, we draw randomly with replacement from the empirical distribution of the number of ruling families to obtain a placebo number of ruling families for that chiefdom. We do this for each chiefdom within each simulation $k \in \{1, K\}$. Next, for each k, we regress the outcome on the placebo log number of ruling families to obtain a placebo effect. The regression is identical to our core specification using district fixed effects, demographic controls and the amalgamation dummy and number of chiefs observed. The position of the true estimate of the effect in the distribution of placebo effects provides us with a p-value indicating the likelihood that our results are consistent with the null hypothesis.

Figure G1 presents histograms of these distributions for $K = 1,000$ using six of our key binary outcomes. P-values are reported below each plot. For each outcome, the placebo effects are centered around zero, approximating well the null hypothesis. In all cases, we can reject the null hypothesis that the effect of the log number of ruling families is zero in a two-sided test with a significance level of 95%.

Appendix H: Outcomes matched on chiefdom of residence, outcomes for those residing in the chiefdom in which they were born.

In the paper, we conducted most of our analysis matching individuals on chiefdom of birth rather than residence. Table H1 shows that our results are robust to matching on residence. In column 1, we match on chiefdom of birth and show that individuals from chiefdoms with more ruling families are significantly more likely to have moved to an urban area outside of the chiefdom. This is consistent with returns to education being higher in urban areas. The rest of the columns show our key outcomes matching individuals on chiefdom of residence instead of chiefdom of birth, testing only for differences between those remaining. Broadly, the results are very similar in significance and magnitude.

We also consider the possibility that our social capital results may be driven by migration. This might be for two distinct reasons. Either individuals have moved from chiefdoms with high numbers of families to cities where they choose not to participate in the social capital activities, or individuals who dislike participating in social capital activities leave chiefdoms with small numbers of families for chiefdoms with higher numbers. In Table H2, we test whether these stories are driving our result by replicating our results on the subsample of the population living in the chiefdom in which they were born. The coefficients are similar to those in Tables 8 and 9 of the paper, retaining both their magnitudes and significance. These results reject the hypothesis that our results are explained primarily by either of the stories above.

Appendix I: Robustness to researcher fixed effects and illegitimate ruling families.

Our key measure of the number of ruling families was collected by a team of eight field researchers who conducted interviews with elders in all chiefdoms. A concern is that the results obtained our paper could be due to a bias of researchers that caused them to count more families in more developed chiefdoms. While we believe this is unlikely given the training given to researchers, in this section we provide a test of this hypothesis. Researchers were rotated between teams over the course of the project. In Table I1, we present results for some of our outcomes in regressions that include fixed effects for each of the researchers. While this cannot rule out a systematic and equal bias on the part of all researchers, adding these fixed effects will change our estimates if there is a strong bias on the part of some particular researchers. That the coefficients reported in Table I1 differ little from those presented in the paper suggests that this is not the case.

A total of seven chiefdoms had new families installed by politicians after independence: Biriwa, Neya, Kaffu Bullom, Koya (Port Loko), Kalansogoia, Neini, Mandu. Since the civil war, none of these families have been viewed as legitimate or permitted to stand in elections. Table I2 shows our core results estimated in the NPS data with a number of ruling families that includes these illegitimate families. Broadly, their inclusion does not affect our results.

Appendix J: Robustness to connections to chieftaincy elite

An alternative explanation for our results could be that the number of ruling families is associated with a broader distribution of patronage within the chiefdom that raises the observed means of our outcomes. Under this hypothesis, it would not be better governance driving the results, but rather a different structure of the patron-client network. The NPS allows us to test this hypothesis directly. It includes three measures of connections to the chieftaincy elite: whether the respondent has a paramount or section chief in the household, whether the respondent is a member of a ruling family, and whether the respondent has village headman in the household. Table J1 shows that our core results are robust to the inclusion of these controls. As expected, the coefficients on connections to the chieftaincy elite are generally positive (and sometimes statistically significant).[1]

It is also possible that the extent of patronage is related to the number of families on the extensive and/or the intensive margin. On the extensive margin, it could be that in places with more families, there are more people affiliated with the ruling families, each of whom demands a transfer. We provide evidence against this hypothesis in Panel A of Table J2, which indicates that there is not more broad-based membership in ruling families or an increased likelihood of having a paramount chief or headman in the household in chieftaincies with more ruling families.

On the intensive margin, it could be that a given elite in a chiefdom with more ruling families demands more patronage, since his vote is now more likely to be pivotal in an election.

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[1] The exception is the coefficient for village headman in columns 1, 2, and 3. The negative sign on this coefficient should be interpreted with caution, and cannot be taken to imply that village headman are worse off than the average citizen within the chiefdom. This coefficient describes the effect of being a village headman who is not connected to the chieftaincy elite, either through relation to a more senior chief, or by membership in a ruling family. If we add the partial effects of these other connections, the total effect of being a well-connected headman is statistically indistinguishable from zero. Note also that 58% of households with headmen also include either a ruling family member or a paramount or section chief.

We investigate this hypothesis in Panel B of Table 13, which shows estimates of the following regression,

$$y_{ic} = \beta_c + \beta_{elite} \cdot E_i + \beta_{fam} \cdot (E_i \times F_c) + \mathbf{X}'_{ic} \cdot \beta_X + \varepsilon_{ic}, \tag{1}$$

where y_{ic} is a development outcome for individual i in chiefdom c, β_c is a chiefdom fixed effect and E_i is a dummy indicating a connection of individual i to the chieftaincy elite. The coefficient β_{fam} describes how differences in the variable of interest between chiefdom elite and non-elites vary with the (log) number of ruling families. The vector $\mathbf{X}'_{ic}$ includes the same individual level socio-demographic covariates as in previous specifications. Here all outcomes are matched on chiefdom of residence. The broadly negative estimates of β_{fam} show that within chiefdoms inequality between elites and non-elites is, if anything, declining with the number of ruling families. This result is inconsistent with a more intensive distribution of patronage driving our results. In fact, the pattern here strengthens our argument as it suggests that, if anything, more competition for the chieftaincy produces more equality (less different outcomes) between elites and non-elites.

Appendix Table A1: Chiefdom data

District	Chiefdom	Number of ruling families	Amalgamation	Number of seats observed	1900 tax assessment per 1000 people observed in 1963 census (Pounds sterling)	Km. to 1895 trade route	Herfindahl index of power concentration	2004 literacy rate for those born in chiefdom
Bo	Badjia	2	0	6		18.39	0.56	0.33
	Bagbo	4	0	6		15.30	0.39	0.36
	Bagbwe	4	0	4		16.62	0.63	0.21
	Baoma	2	0	7		0.82	0.51	0.33
	Bumpe Ngao	5	0	3		12.52	0.33	0.33
	Gbo	3	0	6		10.00	0.50	0.28
	Jaiama Bongor	7	1	1	10.01	8.81	1.00	0.33
	Kakua	7	0	9		6.24	0.28	0.47
	Komboya	3	0	7		29.17	0.39	0.25
	Lugbu	2	0	6		8.99	0.72	0.37
	Niawa Lenga	5	0	4		23.04	0.38	0.28
	Selenga	2	0	7		20.80	0.51	0.29
	Tikonko	4	0	3		1.96	0.33	0.35
	Valunia	5	1	6	7.97	6.84	0.33	0.28
	Wonde	3	0	7		2.69	0.35	0.32
Bombali	Biriwa	3	0	6	7.47	1.85	0.50	0.28
	Bombali Sebora	4	1	10	101.34	0.00	0.28	0.38
	Gbanti Kamaranka	5	1	4		9.61	0.38	0.31
	Gbendembu Ngowahun	4	1	1		14.52	1.00	0.28
	Libeisaygahun	5	1	5		16.73	0.52	0.23
	Magbaimba Ndorhahun	5	1	8		15.60	0.47	0.22
	Makari Gbanti	8	1	2		5.37	0.50	0.31
	Paki Masabong	7	1	3	42.34	13.71	0.33	0.26
	Safroko Limba	2	0	4		7.13	1.00	0.25
	Sanda Loko	5	0	10		22.39	0.26	0.28
	Sanda Tendaran	3	0	7	76.94	13.61	0.59	0.38
	Sella Limba	4	0	8	25.94	9.04	0.28	0.32
	Tambakha	9	1	3	45.65	10.53	0.56	0.19
Bonthe	Bendu-Cha	5	1	3		8.30	0.33	0.33
	Bum	3	0	7	40.02	5.53	0.43	0.25
	Dema	2	0	4	188.15	18.88	0.50	0.15
	Imperri	2	0	4	121.13	14.57	0.50	0.45
	Jong	3	0	6	25.77	19.87	0.39	0.41
	Kpanda Kemo	3	1	7		1.75	0.39	0.29
	Kwamebai Krim	4	1	4	37.83	5.11	0.50	0.18
	Nongoba	3	0	4	12.75	0.51	0.50	0.20
	Sittia	3	0	4		12.68	0.63	0.10
	Sogbeni	2	0	6		6.01	0.56	0.31
	Yawbeko	4	1	2		8.93	0.50	0.28
Kailahun	Dea	2	0	5		39.33	1.00	0.33
	Jawie	2	0	7	26.70	12.86	0.51	0.32
	Kissi Kama	2	0	6		92.22	0.56	0.37
	Kissi Teng	2	0	7		94.87	0.51	0.41
	Kissi Tongi	4	0	8		86.58	0.28	0.28
	Kpeje Bongre	7	1	3	11.58	45.45	0.56	0.38
	Kpeje West	1	0	5	11.58	46.94	1.00	0.43
	Luawa	3	0	9	5.72	66.05	0.43	0.37
	Malema	3	0	3		21.85	0.56	0.31
	Mandu	1	0	5		32.14	1.00	0.34
	Njaluahun	5	0	7		24.69	0.43	0.40
	Penguia	3	0	9		69.21	0.65	0.36
	Upper Bambara	4	0	9	29.84	46.36	0.33	0.37
	Yawei	4	0	8		61.40	0.25	0.35
Kambia	Bramaia	5	1	4	16.22	28.32	0.38	0.32
	Gbinle Dixin	9	1	4	33.42	38.69	0.25	0.29
	Mabolo	5	0	6	9.57	25.18	0.22	0.38
	Magbema	5	0	9	20.22	27.11	0.23	0.35
	Masungbala	8	1	8	23.12	19.60	0.34	0.25
	Samu	4	0	11	8.73	42.44	0.32	0.28
	Tonko Limba	4	0	11	15.23	19.98	0.27	0.33
Kenema	Dama	4	0	9	6.01	10.16	0.31	0.26
	Dodo	2	0	7		39.65	0.59	0.22
	Gaura	5	0	8		2.97	0.25	0.20
	Gorama Mende	2	0	6		26.33	0.72	0.22
	Kandu Leppiama	5	1	3	13.13	19.73	0.56	0.35
	Koya	3	0	8	41.07	4.19	0.47	0.21
	Langrama	2	0	4		9.31	0.63	0.29
	Lower Bambara	2	0	10	23.75	49.02	0.50	0.31
	Malegohun	9	1	4	7.87	49.40	0.50	0.27
	Niawa	5	0	5	15.57	8.90	0.44	0.33
	Nomo	2	0	4	27.20	20.06	0.63	0.24

District	Chiefdom						
	Nongowa	4	0	9	14.36	25.47	0.31	0.39
	Simbaru	1	0	6	10.36	33.00	1.00	0.30
	Small Bo	3	0	9		12.75	0.51	0.30
	Tunkia	3	0	3	17.77	5.21	1.00	0.21
	Wandor	3	0	5	6.83	42.00	0.44	0.24
Koinadugu	Diang	2	0	5		23.69	0.52	0.19
	Folosaba Dembelia	4	1	5	17.26	8.12	1.00	0.25
	Kasunko	5	1	5	12.26	12.40	0.52	0.18
	Mongo	6	1	6	24.53	46.03	0.39	0.18
	Neya	4	1	3	25.71	40.35	0.56	0.11
	Nieni	5	1	2	19.62	29.79	0.50	0.20
	Sengbe	3	1	3	30.54	2.71	1.00	0.27
	Sinkunia	2	0	9	18.34	2.59	0.80	0.29
	Sulima	4	1	2	22.44	6.44	1.00	0.19
	Wara Wara Bafodia	7	1	6	25.10	8.30	0.50	0.26
	Wara Wara Yagala	2	0	6	5.69	6.22	0.50	0.39
Kono	Gbense	4	0	7		30.81	0.55	0.43
	Fiama	3	0	6		43.76	0.39	0.36
	Gbane	2	0	7		56.37	0.59	0.33
	Gbane Kandor	1	0	5		69.53	1.00	0.30
	Gorama Kono	2	0	4		50.08	0.50	0.35
	Kamara	4	0	4	3.20	22.60	0.38	0.48
	Lei	1	0	4		52.30	1.00	0.23
	Mafindor	2	0	6		74.11	0.72	0.24
	Nimikoro	2	0	4	5.51	32.88	0.50	0.46
	Nimiyama	3	0	3		24.96	1.00	0.41
	Sandor	1	0	5	17.03	8.60	1.00	0.25
	Soa	2	0	7	9.63	60.26	0.59	0.27
	Tankoro	3	0	6		42.04	0.39	0.48
	Toli	2	0	5		58.63	1.00	0.24
Moyamba	Bahruwa	4	1	4	42.59	27.65	0.38	0.40
	Bumpeh	2	0	10	35.15	9.58	1.00	0.32
	Dasse	2	0	4		20.50	1.00	0.34
	Fakunya	4	1	3		3.33	0.56	0.40
	Kagboro	2	0	17	54.00	27.15	1.00	0.28
	Kaiyamba	6	0	8		6.47	0.28	0.50
	Kamajei	8	1	3	134.73	7.22	0.33	0.36
	Kongbora	2	0	10		1.80	0.58	0.36
	Kori	4	0	6		0.77	0.56	0.41
	Kowa	6	0	10		12.15	0.30	0.43
	Lower Banta (Gbangbatoke)	5	0	6		36.86	0.72	0.36
	Ribbi	2	0	8	33.45	5.53	0.78	0.28
	Timbale	2	0	5	76.31	12.74	0.52	0.28
	Upper Banta (Mokele)	3	0	5		20.53	1.00	0.36
Port Loko	Bureh Kasseh Makonteh (BKM)	12	1	3	30.69	9.38	0.56	0.32
	Buya	9	1	3	28.27	1.75	0.56	0.28
	Dibia	4	0	7		5.33	0.31	0.31
	Kaffu Bullom	6	0	10	21.42	8.93	0.20	0.41
	Koya	6	0	10	45.13	11.39	0.20	0.28
	Lokomasama	3	0	9	14.06	17.28	0.41	0.29
	Maforki	11	1	5	16.05	4.13	0.52	0.33
	Marampa	6	0	6	17.00	3.02	0.28	0.44
	Masimera	4	0	6	12.25	8.35	0.28	0.25
	Sanda Magbolontor	4	0	8		3.97	0.41	0.26
	Tinkatupa Maka Saffroko (TMS)	7	1	5	13.03	5.84	0.28	0.23
Pujehun	Barri	9	0	10	26.90	7.69	0.26	0.31
	Galliness Perri	3	1	1	35.40	6.83	1.00	0.29
	Kpaka	1	0	8		10.83	1.00	0.29
	Makpele	5	0	8		14.23	0.53	0.29
	Malen	4	0	4	47.81	10.54	0.63	0.26
	Mono Sakrim	1	0	7	32.04	2.98	1.00	0.19
	Panga Kabonde	5	1	3	10.18	1.66	0.56	0.32
	Panga Krim	2	0	6	21.58	1.89	0.56	0.36
	Pejeh (Futa Pejeh)	5	0	9	19.82	2.93	0.33	0.32
	Soro Gbema	4	1	3	9.83	5.00	0.33	0.27
	Sowa	1	0	5	67.65	0.71	1.00	0.35
	Yakemu Kpukumu Krim	3	1	3	19.94	0.83	0.56	0.26
Tonkolili	Gbonkolenken	4	1	3	10.90	18.22	0.56	0.28
	Kafe Simiria	3	1	1	15.00	23.64	1.00	0.18
	Kalansogoia	2	1	3	8.04	19.83	0.56	0.17
	Kholifa Mabang	5	0	10	18.11	8.34	0.24	0.31
	Kholifa Rowala	8	1	3	15.12	1.30	0.56	0.40
	Kunike	3	1	4	5.95	1.44	0.38	0.24
	Kunike Barina	4	0	5	9.32	6.49	0.36	0.28
	Malal Mara	8	1	2	11.87	0.16	0.50	0.27
	Sambaya	2	0	9		31.38	0.80	0.14
	Tane	4	0	9	21.81	1.69	0.33	0.25
	Yoni	8	1	4	12.91	20.70	0.38	0.32

Table B1: An alternative measure of the concentration of power.

Dependent variable	(1)	(2)	(3)	(4)	(5)
		Number of seats held			
		by family with most seats			
# of ruling families	-0.32				0.27
	(0.06)				(0.10)
ln(# of ruling families)		-1.39	-1.66	-1.66	-2.62
		(0.22)	(0.23)	(0.24)	(0.44)
Amalgamation			1.26	1.22	1.11
			(0.42)	(0.43)	(0.42)
Number of chiefs recalled		0.51	0.51	0.51	
		(0.09)	(0.08)	(0.08)	
F	30.11	40.98			
R^2	0.16	0.20	0.62	0.62	0.63
Observations	149	149	149	149	149
District fixed effects	NO	NO	YES	YES	YES
Geographic controls	NO	NO	NO	YES	YES

Notes: Robust standard errors in parentheses. The number of seats held by the family with the most seats has mean 3.5 (s.d. = 1.5). Geographic controls are a dummy for the presence of mining permissions in the 1930s, distance to coast, distance to nearest river, distance to 1895 trade routes, distance to 1907 railroad, and minimum distance to Bo, Kenema or Freetown.

Table C1: Estimates of magnitude of potential omitted variable bias

	(1) Respect authority	(2) Bridging capital index	(3) Bonding capital index	(4) Collective action index
Predicted variable				
ln(# ruling families)	0.000	-0.005	0.001	-0.001
	(0.009)	(0.007)	(0.003)	(0.006)
R-squared	0.960	0.948	0.962	0.990
Observations	149	149	149	149
District FE	YES	YES	YES	YES

Outcome variables are predictions of the outcome using five correlates of development at the turn of the century: a dummy for the presence of mining permissions in the 1930s, distance to coast, distance to nearest river, distance to 1895 trade routes, distance to 1907 railroad, and minimum distance to Bo, Kenema or Freetown. Standard errors in parenthesis have been block bootstrapped at the chiefdom level to account for sampling error in the prediction; the prediction was estimated 500 times, drawing with replacement a sample of chiefdoms and all observations within them.

Table D1: Effects on literacy by birth cohort

Birth Cohort	Pre 1918	1919-1923	1924-1928	1929-1933	1934-1938	1939-1943	1944-1948
ln(# ruling families)	0.002	0.006	0.009	0.005	0.009	0.010	0.015
	(0.002)	(0.004)	(0.004)	(0.004)	(0.004)	(0.005)	(0.008)
R^2	0.29	0.23	0.28	0.24	0.27	0.28	0.41
Observations	148	148	148	148	148	148	148
Birth Cohort	1949-1953	1954-1958	1959-1963	1964-1968	1969-1973	1974-1978	1979-1983
ln(# ruling families)	0.031	0.034	0.041	0.036	0.040	0.037	0.046
	(0.012)	(0.011)	(0.012)	(0.011)	(0.012)	(0.013)	(0.017)
R^2	0.45	0.28	0.35	0.31	0.28	0.26	0.26
Observations	148	149	149	149	149	149	149

Notes: Robust standard errors in parenthesis. The table presents coefficients in the OLS regression of the chiefdom literacy rate among five-year birth cohorts on the log number of families. All specifications include number of chiefs recalled, an amalgamation dummy and district fixed effects. Individuals are matched on chiefdom of current residence; chiefdom of birth is not available in the 1963 census. Cohorts born before 1953 are observed in the 1963 census, in which one chiefdom, Dibia, has missing data. Only chiefdom level aggregates were available in the 1963 census. For continuity, we present results for cohorts observed in the 2004 census using aggregates as well.

Table E1: Individual asset results (NPS)

Asset	(1) Bicycle	(2) Generator	(3) Mobile phone	(4) Car, truck or motor-cycle	(5) Electric fan	(6) Radio	(7) Umbrella	(8) TV	(9) Cement or tile floor	(10) Cement wall	(11) Zinc or tile roof
$\ln$(# of ruling families)	0.001	0.011	0.068	0.006	0.020	0.051	0.046	0.020	0.078	0.043	0.051
	(0.011)	(0.008)	(0.025)	(0.005)	(0.008)	(0.023)	(0.021)	(0.008)	(0.026)	(0.022)	(0.031)
R^2	0.027	0.026	0.059	0.011	0.028	0.050	0.036	0.024	0.058	0.041	0.105
Observations	5,072	5,074	5,071	5,072	5,074	5,070	5,077	5,072	5,077	5,077	5,077
District fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Dependent variables are all dummy variables $\in \{0, 1\}$. All specifications include 12 district fixed effects, number of seats and an amalgamation dummy. Demographic controls are gender, age, age squared, and ethnicity dummies for the household head.

Table E2: Individual measures of social capital (NPS)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
					Bonding social capital index					
Dependent variable	Savings or or credit group	Labor gang	Secret society	Trade union	Political group	Women's group	Youth group	Farmer's group	Religious group	School group
ln(# of ruling families)	-0.033 (0.015)	-0.069 (0.022)	-0.051 (0.026)	0.003 (0.005)	-0.009 (0.011)	-0.047 (0.014)	0.002 (0.016)	-0.077 (0.024)	-0.020 (0.019)	-0.023 (0.017)
R^2	0.041	0.083	0.072	0.008	0.056	0.209	0.166	0.074	0.079	0.069
Observations	5,056	5,060	5,050	5,051	5,055	4,953	4,283	4,901	5,063	5,056
	Bridging social capital index			*Collective action index*		*Trust in others*		*Trust in chiefs*		
Dependent variable	Community meeting	Local council meeting	Meeting with chief	Road brushing	Communal labor	Trust people outside locality	Trust people inside locality	Trust chief	Believes chiefs are corrupt	
ln(# of ruling families)	-0.086 (0.024)	-0.054 (0.018)	-0.043 (0.026)	-0.085 (0.028)	-0.052 (0.017)	0.017 (0.025)	0.002 (0.024)	-0.003 (0.023)	0.011 (0.020)	
R^2	0.083	0.060	0.087	0.118	0.061	0.023	0.044	0.022	0.081	
Observations	5,035	5,051	4,556	5,049	4,993	5,077	5,077	5,077	5,077	
District fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Dependent variables are all dummy variables $\in \{0, 1\}$. Outcomes in columns 6-8, second row, are affirmative responses to, "in your opinion do you believe [....] or do you have to be careful in dealing with them?" "Believe" is a close translation of the Krio word for trust. The trust outcome in column 9, second row, is the response to the question: "If the Paramount Chief was given 500 million Leones ($125,000) to complete a project in this area, do you believe they would spend all the money doing a good job on the project or would they cut some of the money?" (cut meaning take for their own purposes). The outcome equals one if the chief would either "do a bad job and cut most of the money" or "they would just take all the money."

Table E3: Social capital activities, correlation coefficients

	Bridging capital index	Attended community meeting	Bonding capital index	Savings or credit group member	Labor gang member	Secret society member	Collective action index
Panel A: Individual level correlations of activities							
Bridging capital index	1.00						
Attended community meeting	0.73	1.00					
Bonding capital index	0.41	0.37	1.00				
Savings or credit group member	0.09	0.08	0.37	1.00			
Labor gang member	0.21	0.23	0.50	0.03	1.00		
Secret society member	0.12	0.10	0.48	0.06	0.15	1.00	
Collective action index	0.38	0.42	0.33	0.13	0.19	0.11	1.00
Panel B: Chiefdom level correlations of aggregate shares							
Primary school attainment (Census)	-0.09	-0.13	0.01	0.02	-0.36	0.23	-0.02
Non-agricultural employment (Census)	-0.08	-0.11	-0.08	-0.02	0.02	-0.08	-0.35
Asset wealth index (NPS)	-0.23	-0.31	-0.27	0.09	-0.32	-0.16	-0.39
Housing quality index (NPS)	-0.13	-0.08	-0.20	0.08	-0.16	-0.27	-0.25

Notes: Panel A shows raw correlations of variables across individuals. Panel B shows the correlations across chiefdoms chiefdom level averages. Individuals are matched on chiefdom of birth.

Table F1: The number of ruling families and rice ecology.

Dependent Variable	(1) Plot is lowland	(2) Share of rice acreage lowland
Ln(# of ruling families)	-0.009	0.008
	(0.028)	(0.032)
Amalgamation	-0.013	0.004
	(0.040)	(0.046)
Number of chiefs recalled	0.009	0.005
	(0.006)	(0.007)
R^2	0.053	0.430
Number of observations	9,664	142
District Fixed Effects	YES	YES
Outcome mean	0.466	0.37
Outcome s.d.	0.499	0.214

Notes: Robust standard errors clustered at the chiefdom level are reported in parenthesis. The outcome in column 1 is a dummy for whether a plot owned by the household is of the higher productivity "lowland" variety, either inland valley swamp, boli land, mangrove swamp or riverrine area. The outcome in column 2 is the share of total acreage owned by households in the chiefdom that is lowland.
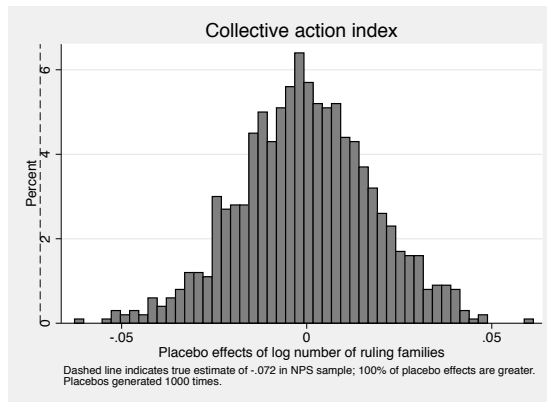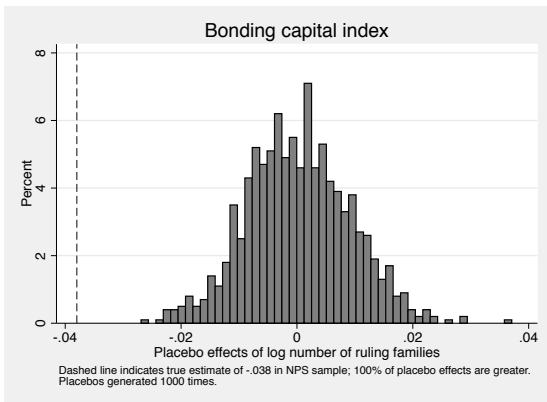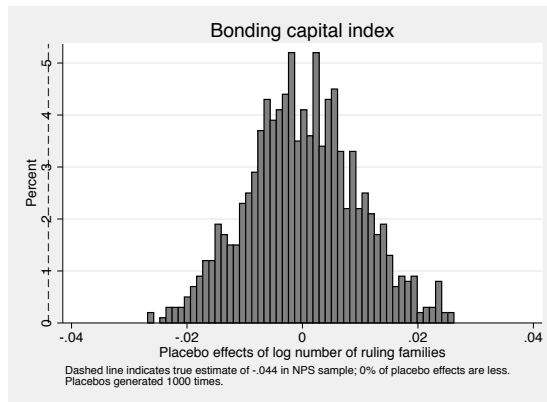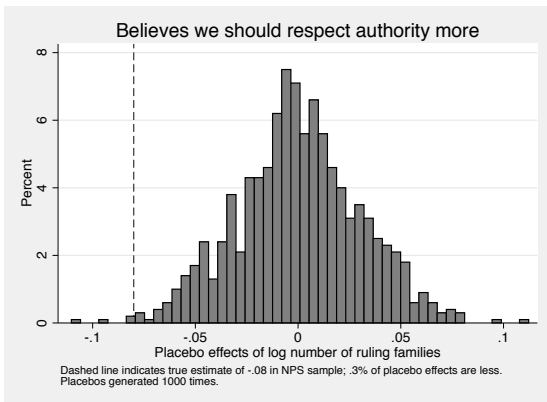
Primary education attainment

Placebo effects of log number of ruling families

Dashed line indicates true estimate of .049 in NPS sample; .2% of placebo effects are greater.
Placebos generated 1000 times.

Prevalence of severe or moderate anemia under age 5

Placebo effects of log number of ruling families

Dashed line indicates true estimate of -.091 in DHS sample; 1.1% of placebo effects are less.
Placebos generated 1000 times.

Believes we should respect authority more

Placebo effects of log number of ruling families

Dashed line indicates true estimate of -.08 in NPS sample; .3% of placebo effects are less.
Placebos generated 1000 times.

Bonding capital index

Placebo effects of log number of ruling families

Dashed line indicates true estimate of -.044 in NPS sample; 0% of placebo effects are less.
Placebos generated 1000 times.

Bonding capital index

Placebo effects of log number of ruling families

Dashed line indicates true estimate of -.038 in NPS sample; 100% of placebo effects are greater.
Placebos generated 1000 times.

Collective action index

Placebo effects of log number of ruling families

Dashed line indicates true estimate of -.072 in NPS sample; 100% of placebo effects are greater.
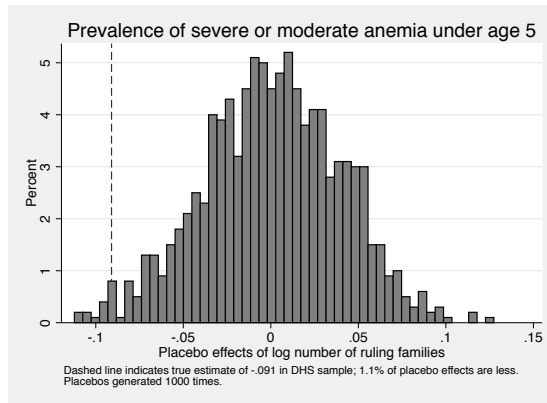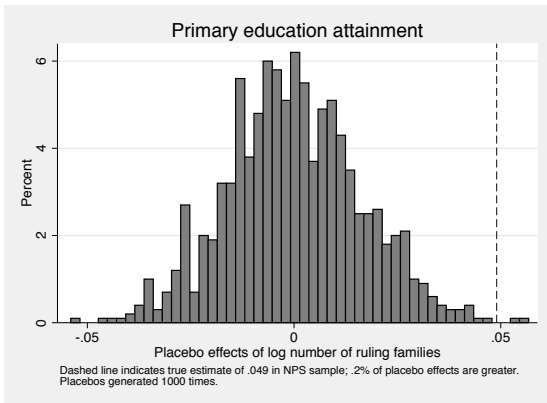Placebos generated 1000 times.

Figure G1: Permutation based p-values for NPS and DHS data

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Table H1: Outcomes matched on chiefdom of current residence

Dependent variable	(1) Resides in urban area outside chiefdoms	(2) Non-ag. employ- ment	(3) Literacy	(4) Agree one should respect authority	(5) Bridging capital index	(6) Bonding capital index	(7) Collective action index
Panel A: Baseline specification							
ln(# of ruling families)	0.031	0.022	0.045	-0.080	-0.066	-0.044	-0.067
	(0.016)	(0.011)	(0.011)	(0.040)	(0.018)	(0.009)	(0.027)
R^2	0.038	0.033	0.135	0.067	0.136	0.118	0.151
Panel B: Baseline specification with additional geographic controls							
ln(# of ruling families)	0.026	0.014	0.032	-0.083	-0.060	-0.044	-0.080
	(0.014)	(0.011)	(0.010)	(0.040)	(0.019)	(0.009)	(0.028)
R^2	0.042	0.037	0.137	0.070	0.139	0.120	0.154
Observations	2,622,861	2,288,874	2,148,914	4,391	4,275	3,485	4,296
District fixed effects	YES	YES	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors in parenthesis are robust to heteroskedasticity and clustered at the chiefdom level. All outcomes are matched on chiefdom of residence except in column 1 in which individuals are matched on chiefdom of birth. Urban area outside chiefdom indicates an area such as Bo or Kenema, administered by a town local council and not a Paramount chief or anywhere in the urban and peri-urban Western peninsula where the capital Freetown is located. Specifications in Panel B include six additional geographic controls: a dummy for the presence of mining permissions in the 1930s, distance to coast, distance to nearest river, distance to 1895 trade routes, distance to 1907 railroad, and minimum distance to Bo, Kenema or Freetown.

Table H2: Social outcomes for those living in the chiefdom in which they were born

Dependent variable	(1) Bridging social capital index	(2) Bonding social capital index	(3) Collective action index	(4) Agree one should respect authority	(5) Agree only older people can lead
ln(# of ruling families)	-0.060	-0.043	-0.067	-0.086	-0.050
	(0.021)	(0.010)	(0.027)	(0.040)	(0.028)
Amalgamation	0.009	0.032	0.047	0.074	0.008
	(0.036)	(0.016)	(0.033)	(0.049)	(0.043)
Number of chiefs recalled	-0.000	0.003	0.002	0.013	0.009
	(0.005)	(0.002)	(0.004)	(0.007)	(0.006)
R^2	0.138	0.122	0.152	0.070	0.070
Observations	3,466	2,825	3,488	3,565	3,565
District Fixed Effects	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES

Notes: Robust standard errors clustered at the chiefdom level are in parenthesis. The sample comprises individuals who live in the chiefdom in which they were born.

Table I1: Results with researcher fixed effects

Dependent variable	(1) Literacy	(2) Primary	(3) Secondary	(4) Non-ag. employ.	(5) Respects authority	(6) Weight-for- height Z-score	(7) Asset wealth index
Data source	Census	Census	Census	Census	NPS	DHS	NPS
ln(# of ruling families)	0.045	0.049	0.036	0.015	-0.067	0.248	0.053
	(0.011)	(0.013)	(0.009)	(0.007)	(0.027)	(0.108)	(0.022)
Variable	Bridging capital index	Attended community meeting	Bonding capital index	Savings and credit group member	Labor gang member	Secret society member	Collective action index
Data source	NPS	NPS	NPS	NPS	NPS	NPS	NPS
ln(# families)	-0.060	-0.078	-0.038	-0.036	-0.066	-0.044	-0.060
	(0.017)	(0.022)	(0.008)	(0.016)	(0.019)	(0.024)	(0.018)

Notes: Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Specifications are identical to those used in paper in tables 4, 5, 6, 8 and 10 that include district fixed effects, controls for the number of families observed and amalgamation and demographic controls.

Table I2: Results with illegitimate families included

Dependent variables	(1) Primary school attainment	(2) Asset wealth index	(3) Housing quality index	(4) Agree one should resp. authority	(5) Bridging capital index	(6) Bonding capital index	(7) Collective action index
ln(# of ruling families)	0.049	0.026	0.053	-0.088	-0.064	-0.038	-0.069
	(0.025)	(0.010)	(0.023)	(0.028)	(0.019)	(0.008)	(0.020)
Amalgamation	0.034	-0.021	-0.018	0.074	0.003	0.031	0.048
	(0.045)	(0.017)	(0.034)	(0.036)	(0.028)	(0.012)	(0.024)
Number of chiefs recalled	0.007	0.003	0.011	0.010	-0.005	0.002	0.000
	(0.007)	(0.002)	(0.005)	(0.005)	(0.004)	(0.002)	(0.003)
R^2	0.121	0.063	0.093	0.053	0.126	0.102	0.121
Observations	5,041	5,054	5,077	5,077	4,499	4,070	4,976
District fixed effects	YES	YES	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES	YES	YES

Notes: The log number of ruling families includes an additional family for Biriwa, Neya, Kaffu Bullom, Koya (Port Loko), Kalansogoia, Neini, Mandu chiefdoms, which had families introduced by political influence after independence that are today viewed as illegitimate. Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Each specification also includes number of chiefs recalled and an amalgamation dummy. Demographic controls include age, age squared, and gender and ethnicity dummies. Individuals matched on chiefdom of birth.

Table J1: Robustness check including connections to chieftaincy elite

Dependent variables	(1) Primary school attainment	(2) Asset wealth index	(3) Housing quality index	(4) Agree one should resp. authority	(5) Bridging capital index	(6) Bonding capital index	(7) Collective action index
ln(# of ruling families)	0.055	0.028	0.064	-0.086	-0.059	-0.036	-0.067
	(0.025)	(0.010)	(0.023)	(0.027)	(0.018)	(0.008)	(0.019)
Paramount or section chief in household	0.012	0.021	0.048	0.014	0.085	0.048	0.053
	(0.025)	(0.013)	(0.022)	(0.031)	(0.024)	(0.013)	(0.022)
Member of ruling family	0.029	0.025	0.027	0.003	0.079	0.021	0.038
	(0.017)	(0.007)	(0.013)	(0.020)	(0.014)	(0.008)	(0.013)
Headman in household	-0.062	-0.032	-0.077	0.015	0.095	0.063	0.081
	(0.020)	(0.007)	(0.015)	(0.025)	(0.019)	(0.009)	(0.017)
R^2	0.125	0.071	0.104	0.070	0.180	0.157	0.171
Observations	4,770	4,780	4,803	4,803	4,252	3,867	4,714
District fixed effects	YES	YES	YES	YES	YES	YES	YES
Demographic controls	YES	YES	YES	YES	YES	YES	YES

Notes: Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Each specification also includes number of chiefs recalled and an amalgamation dummy. Demographic controls are age, age squared, and gender and ethnicity dummies. Individuals matched on chiefdom of birth.

	(1)	(2)	(3)
Panel A: Extensive margin			
Dependent variable	Member of ruling family	Paramount or section chief in household	Headman in household
ln(# of ruling families)	-0.015	-0.021	-0.013
	(0.025)	(0.013)	(0.018)
R^2	0.259	0.204	0.197
Observations	149	149	149
District fixed effects	YES	YES	YES

Panel B: Intensive margin			
Dependent variable	Primary school attainment	Mobile phone ownership	Has tile or cement floor
Paramount or section chief in household	0.007	0.026	0.090
	(0.041)	(0.042)	(0.049)
Paramount or section chief in household × ln(# of ruling families)	-0.001	0.011	-0.022
	(0.031)	(0.032)	(0.037)
R^2	0.169	0.128	0.115
Observations	4,353	4,381	4,387
Ruling family member	0.058	0.069	0.047
	(0.039)	(0.026)	(0.034)
Ruling family member × ln(# of ruling families)	-0.032	-0.017	0.003
	(0.029)	(0.018)	(0.022)
R^2	0.174	0.133	0.121
Observations	4,103	4,128	4,134
Headman in household	0.036	0.050	0.032
	(0.034)	(0.025)	(0.030)
Headman in household × ln(# of ruling families)	-0.039	-0.033	-0.024
	(0.025)	(0.019)	(0.024)
R^2	0.170	0.127	0.112
Observations	4,349	4,377	4,383

Notes: In panel A, dependent variables are chiefdom shares observed in the NPS, matched on chiefdom of birth. Specifications include district fixed effects and standard errors are robust to heteroskedasticity. In panel B, dependent variables are all dummies matched on chiefdom of residence. Standard errors are robust to heteroskedasticity and clustered at the chiefdom level. Each specification includes chiefdom fixed effects and demographic controls (gender and ethnicity dummies, age and age squared). Specifications in both panels includes the number of chiefs recalled and an amalgamation dummy.