Annex E: State Size and Democracy
Usage of Alternative Variable to Measure Muslim-Majority Status

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1 Introduction

2 Empirical Strategy 1: Regression

Table E1: Relationship between Logged Population and Participatory Democracy

	v2x_partipdem					
	Exposure-Outcome, Pooled			Pooled (No Interaction)	Panel FE (No Interaction)	Pooled (Interaction)
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Population (Logged)	0.0256***	0.0250***	0.0206***	0.0205***	0.1061***	0.0272**
	(0.0034)	(0.0033)	(0.0032)	(0.0031)	(0.0263)	(0.0098)
	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.0001	p = 0.0058
Clientelism		−0.3498***		−0.2821***	−0.3202***	−0.1584*
		(0.0529)		(0.0462)	(0.0390)	(0.0645)
		p = 0.0000		p = 0.0000	p = 0.0000	p = 0.0141
Military Participation Rate (MPR)			−0.0147***	−0.0136***	0.0006	0.0101*
			(0.0017)	(0.0017)	(0.0007)	(0.0049)
			p = 0.0000	p = 0.0000	p = 0.3655	p = 0.0385
Urbanisation (% of Population)	−0.2192***	−0.1547***	−0.0742	−0.0326	0.5428***	0.4148*
	(0.0481)	(0.0478)	(0.0430)	(0.0417)	(0.0699)	(0.1615)
	p = 0.00001	p = 0.0013	p = 0.0844	p = 0.4339	p = 0.0000	p = 0.0103
Per Capita GDP (Logged)	0.1117***	0.0351*	0.1048***	0.0436***	0.0101	0.0442***
	(0.0111)	(0.0154)	(0.0102)	(0.0142)	(0.0123)	(0.0152)
	p = 0.0000	p = 0.0227	p = 0.0000	p = 0.0022	p = 0.4146	p = 0.0037
Government Expenditurre (% of GDP)	0.0814	−0.0190	0.0675	−0.0124	−0.1203*	−0.0566
	(0.1134)	(0.1045)	(0.0984)	(0.0950)	(0.0533)	(0.0926)
	p = 0.4731	p = 0.8560	p = 0.4931	p = 0.8959	p = 0.0241	p = 0.5414
Foreign Aid Received (% of GNI)	0.0991	−0.0907	0.0731	−0.0780	−0.0208	0.1831
	(0.1698)	(0.1629)	(0.1564)	(0.1536)	(0.0517)	(0.1513)
	p = 0.5597	p = 0.5777	p = 0.6404	p = 0.6115	p = 0.6876	p = 0.2262
Resource Dependence	−0.0019*	0.0012	−0.0032***	−0.0006	−0.0028***	−0.0005
	(0.0009)	(0.0012)	(0.0008)	(0.0010)	(0.0008)	(0.0011)
	p = 0.0347	p = 0.3054	p = 0.00003	p = 0.5305	p = 0.0004	p = 0.6582
Ethnic Fractionalization	−0.1047**	−0.1717***	−0.0608	−0.1179***		−0.0954**
	(0.0405)	(0.0401)	(0.0371)	(0.0377)		(0.0350)
	p = 0.0098	p = 0.00002	p = 0.1014	p = 0.0018		p = 0.0065
% Muslims	−0.1964***	−0.2293***	−0.1435***	−0.1739***	1.5956***	−0.1730***
	(0.0370)	(0.0411)	(0.0333)	(0.0356)	(0.4156)	(0.0344)
	p = 0.0000002	p = 0.0000001	p = 0.00002	p = 0.000002	p = 0.0002	p = 0.0000005
Population × Urbanization						−0.0147
						(0.0132)
						p = 0.2636
Clientelism × Urbanization						−0.2109*
						(0.1045)
						p = 0.0436
MPR × Urbanization						−0.0327***
						(0.0061)
						p = 0.0000001
Constant	−0.8588***	−0.0536	−0.7598***	−0.1177	0.0215	−0.3736
	(0.1106)	(0.1665)	(0.1021)	(0.1543)	(0.0194)	(0.2296)
	p = 0.0000	p = 0.7477	p = 0.0000	p = 0.4458	p = 0.2680	p = 0.1037
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country FE	No	No	No	No	Yes	No
N	1204	1204	1204	1204	1204	1204
R-squared	0.4768	0.5242	0.5878	0.6180	0.5573	0.6521
Adj. R-squared	0.4518	0.5009	0.5677	0.5990	0.5249	0.6338
Residual Std. Error	0.1458 (df = 1148)	0.1391 (df = 1147)	0.1295 (df = 1147)	0.1247 (df = 1146)	0.0509 (df = 1121)	0.1192 (df = 1143)
F Statistic	19.0228*** (df = 55; 1148)	22.5623*** (df = 56; 1147)	29.2063*** (df = 56; 1147)	32.5255*** (df = 57; 1146)	17.2105*** (df = 82; 1121)	35.7055*** (df = 60; 1143)

***p < .005; **p < .01; *p < .05

Table E2: Relationship between Logged Population and Military Participation Rate

	milrate		
	Pooled (No Interaction)	**Panel FE (No Interaction)**	**Pooled (Interaction)**
	Model 1	**Model 2**	**Model 3**
Population (Logged)	−0.3307***	−2.6021	−0.4565
	(0.0992)	(1.4220)	(0.4014)
	p = 0.0009	p = 0.0673	p = 0.2555
Clientelism	4.9753*	12.6894***	2.2609
	(2.1054)	(2.6786)	(2.6382)
	p = 0.0182	p = 0.000003	p = 0.3915
Urbanisation (% of Population)	8.9641***	−0.2919	3.7647
	(1.5279)	(2.8753)	(7.9146)
	p = 0.0000	p = 0.9192	p = 0.6344
Per Capita GDP (Logged)	0.6215	0.9329	0.4811
	(0.4490)	(0.8550)	(0.4799)
	p = 0.1664	p = 0.2753	p = 0.3161
Government Expenditurre (% of GDP)	0.4804	0.5276	−0.1321
	(3.7976)	(2.4023)	(3.8634)
	p = 0.8994	p = 0.8262	p = 0.9728
Foreign Aid Received (% of GNI)	0.9281	−0.1054	0.4468
	(4.2603)	(3.7852)	(4.0770)
	p = 0.8276	p = 0.9778	p = 0.9128
Resource Dependence	−0.1339***	−0.0630	−0.1128***
	(0.0372)	(0.0354)	(0.0383)
	p = 0.0004	p = 0.0748	p = 0.0033
Ethnic Fractionalization	3.9453***		3.6001**
	(1.2833)		(1.2953)
	p = 0.0022		p = 0.0055
% Muslims	4.0699***	−37.6325*	3.9073***
	(1.0797)	(18.4322)	(1.1061)
	p = 0.0002	p = 0.0412	p = 0.0005
Population × Urbanization			0.2537
			(0.6039)
			p = 0.6744
Clientelism × Urbanization			4.3852
			(4.3292)
			p = 0.3111
Constant	−4.7050	−1.1250	−0.3073
	(5.5675)	(0.8925)	(8.4619)
	p = 0.3981	p = 0.2075	p = 0.9711
Year FE	Yes	Yes	Yes
Country FE	No	Yes	No
N	1204	1204	1204
R-squared	0.2767	0.1933	0.2795
Adj. R-squared	0.2414	0.1351	0.2430
Residual Std. Error	4.5354 (df = 1147)	2.8362 (df = 1122)	4.5308 (df = 1145)
F Statistic	7.8365*** (df = 56; 1147)	3.3192*** (df = 81; 1122)	7.6566*** (df = 58; 1145)

***p < .005; **p < .01; *p < .05

Table E3: Relationship between Logged Population and Clientelism

	v2xnp_client		
	Pooled (No Interaction)	**Panel FE (No Interaction)**	**Pooled (Interaction)**
	Model 1	**Model 2**	**Model 3**
Population (Logged)	−0.0003	0.1659***	−0.0330***
	(0.0026)	(0.0339)	(0.0113)
	p = 0.9101	p = 0.000002	p = 0.0036
Military Participation Rate	0.0037**	0.0050***	0.0087*
	(0.0013)	(0.0010)	(0.0043)
	p = 0.0053	p = 0.0000002	p = 0.0435
Urbanisation (% of Population)	0.1474***	0.0703	−0.5424**
	(0.0435)	(0.0591)	(0.1999)
	p = 0.0007	p = 0.2343	p = 0.0067
Per Capita GDP (Logged)	−0.2173***	−0.0531***	−0.2335***
	(0.0091)	(0.0127)	(0.0118)
	p = 0.0000	p = 0.00003	p = 0.0000
Government Expenditurre (% of GDP)	−0.2833***	−0.5218***	−0.3689***
	(0.0820)	(0.1174)	(0.0903)
	p = 0.0006	p = 0.00001	p = 0.00005
Foreign Aid Received (% of GNI)	−0.5358***	−0.0595	−0.6775***
	(0.1760)	(0.1350)	(0.1946)
	p = 0.0024	p = 0.6596	p = 0.0005
Resource Dependence	0.0092***	0.0002	0.0101***
	(0.0011)	(0.0011)	(0.0011)
	p = 0.0000	p = 0.8428	p = 0.0000
Ethnic Fractionalization	−0.2027***		−0.1970***
	(0.0285)		(0.0288)
	p = 0.0000		p = 0.0000
% Muslims	−0.1076*	−0.0060	−0.0943*
	(0.0421)	(0.3539)	(0.0387)
	p = 0.0107	p = 0.9865	p = 0.0149
Population × Urbanization			0.0514***
			(0.0158)
			p = 0.0012
MPR × Urbanization			−0.0073
			(0.0056)
			p = 0.1921
Constant	2.2766***	0.0386*	2.8780***
	(0.0916)	(0.0173)	(0.2373)
	p = 0.0000	p = 0.0257	p = 0.0000
Year FE	Yes	Yes	Yes
Country FE	No	Yes	No
N	1204	1204	1204
R-squared	0.7732	0.5041	0.7792
Adj. R-squared	0.7621	0.4683	0.7680
Residual Std. Error	0.1243 (df = 1147)	0.0565 (df = 1122)	0.1227 (df = 1145)
F Statistic	69.8131*** (df = 56; 1147)	14.0812*** (df = 81; 1122)	69.6732*** (df = 58; 1145)

***p < .005; **p < .01; *p < .05

3 Empirical Strategy 2: Causal Mediation Analysis

3.1 H_2: The long-term operation of clientelism

Figure E1 shows the effect of state size (population) on democracy which is operated by clientelism, denoted by the ACME. As the ACME is not significant, we cannot reject the null hypothesis that the effect of population size on democracy is not operated by clientelism. We will return to this in section 3.3 on the conditional operation of clientelism since I suspect heterogeneity in the ACME conditioned by the urban share of the population.

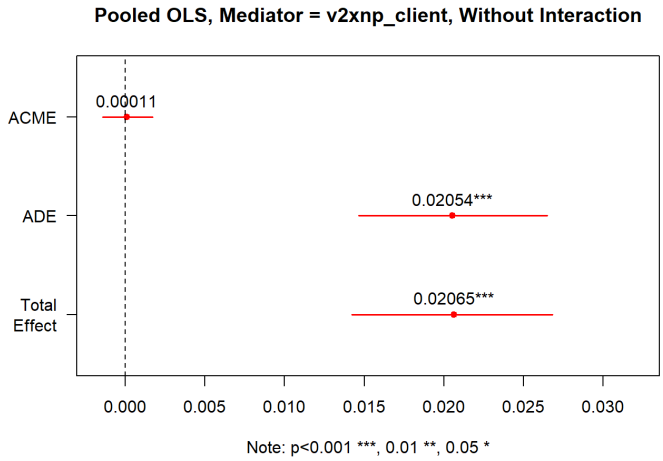

Figure E1: Long-term operation of clientelism.

3.2 H_{2a}: The short-term operation of clientelism

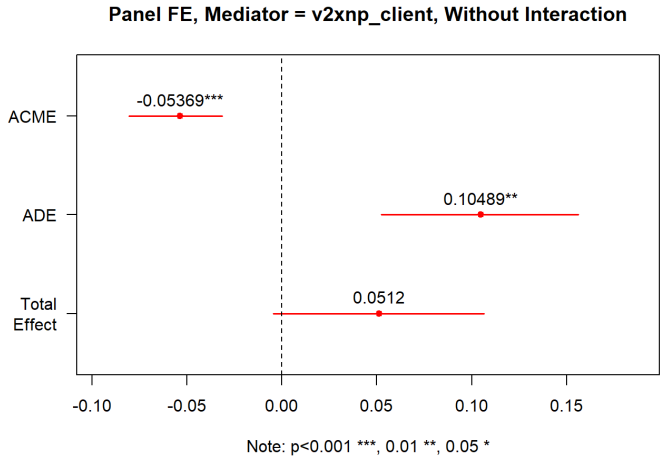

Figure E2: Short-term operation of clientelism.

Figure E2 shows the short-term effect of state size (population) on democracy which is operated by clientelism, denoted by the ACME. Since ACME $= -0.05369$ and is significant at the 0.001 level, we can reject the null hypothesis.

What is surprising about this result, as with the thesis, is that the ACME is negative. Furthermore, Model 2 of Table E3 also show a positive and significant relationship between population size and

clientelism year-on-year. This means that as states experience population growth year-on-year, they are likely to experience higher levels of democracy because clientelism becomes more prevalent with population growth. The occurrence of this result may be due to a long-term effect of clientelism, where states that experience prior levels of clientelism are more likely to retain their clientelistic linkages, even if they grow to a larger size in the future. Further future research should be conducted to verify the institutional legacies of clientelism, where such institutional legacies may mirror the kind of patronage uncovered and explained in Poczter and Pepinsky (2016).

3.3 H_{2b}: The conditional operation of clientelism

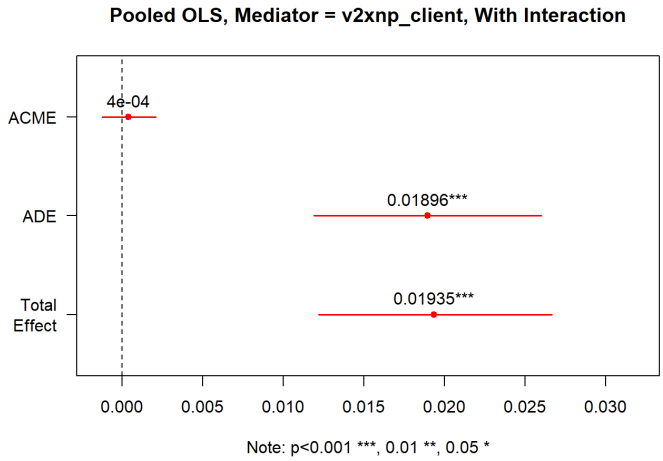

Figure E3: Conditional operation of clientelism.

From Figure E3, there does not seem, at first glance, to be any evidence of the effect of population size on democracy being operated by clientelism. However, further inspecting the model by modelling the less urban sample and the more urban sample yields the following observations. First, with an ACME of 0.00404 among the less urban states and an ACME of -0.00321 among more urban states, significant at the 0.01 level, we can conclude that there is heterogeneity in the operation of clientelism.

Turning first to the less urban states (see Fig. E4), we observe a positive and significant ACME. This ACME informs us that for every 10% increase in population size, the V-Dem Participatory Democracy score is expected to increase, on average, by 0.000385. Turning to the more urban states (see Fig. E5), however, we observe a reversal in the relationship; for every 10% increase in population size, the Freedom House democracy score is expected to decrease, on average, by 0.000306. This may indicate that less urban states with larger populations place resource strains on clientelistic linkages, thereby diminishing the undemocratic effects of clientelism and increasing the levels of democracy as a result. Conversely, in more urban states, an increase in population size may, instead, prompt higher levels of clientelism since political elites are able to leverage on efficient clientelistic linkages bankrolled and driven by economies of scale. A further explanation is given in Chapter 5 of the thesis.

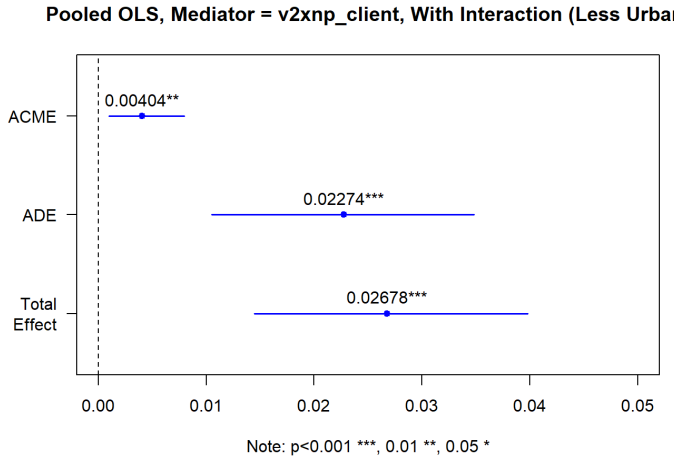

Figure E4: Conditional operation of clientelism in less urban states.

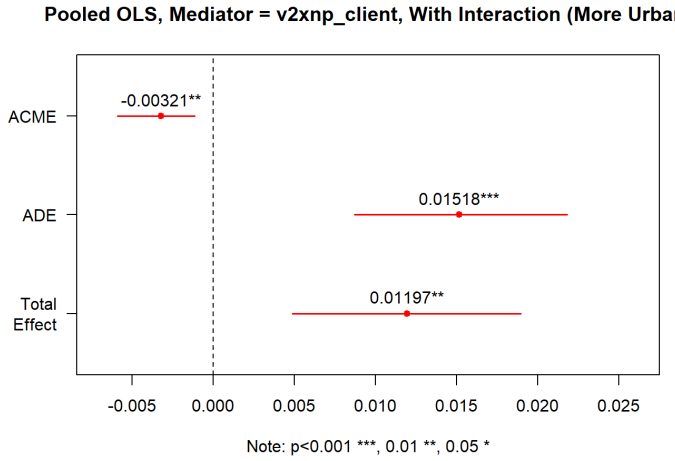

Figure E5: Conditional operation of clientelism in more urban states.

3.4 H_3: The long-term operation of coercive capacity

Figure E6 shows the effect of population size on democracy which is operated by coercive capacity, measured using the number of military personnel per 1000 people (alternatively termed military participation rate), denoted by the ACME. The ACME is positive at 0.00453, significant at the 0.01 level. This means that for every 10% increase in population size, the v-Dem Participatory Democracy score increases by 0.000432, with this effect being operated by military participation rate. Furthermore, Model 1 of Table E2 shows a negative and significant relationship between population size and military participation rate. We can thus reject the null hypothesis and conclude that there is an effect of population size on democracy that is being operated by coercive capacity. That is, smaller states, being more likely to possess larger coercive capacities relative to their population size, are likely to have lower levels of democracy.

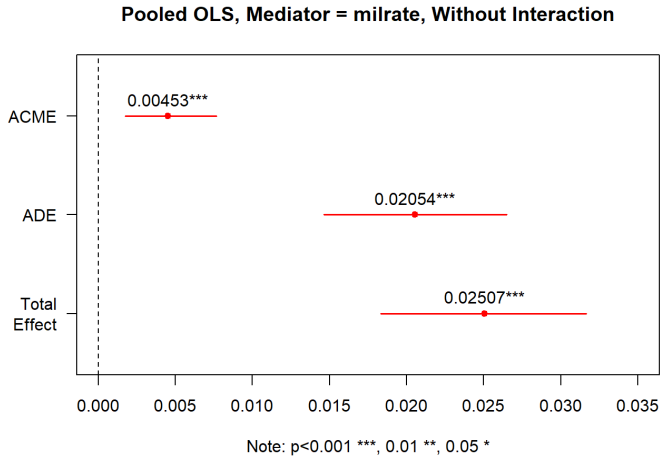

Figure E6: Long-term operation of coercive capacity.

3.5 H_{3a}: The short-term operation of coercive capacity

Figure E7 shows the short-term effect of population size on democracy which is operated by coercive capacity, denoted by the ACME. The ACME is, however, not significant. We cannot reject the null hypothesis that there is no operation of the effect of population size on democracy through coercive capacity on the short term. The potential explanation for this has been detailed in Chapter 5 of the thesis.

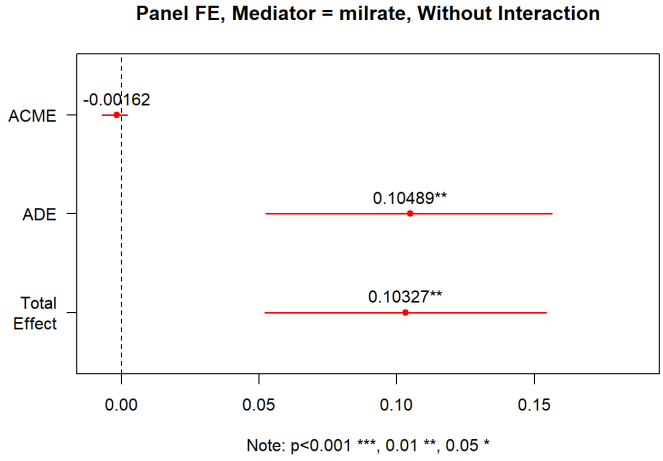

Figure E7: Short-term operation of coercive capacity.

3.6 H_{3b}: The conditional operation of coercive capacity

The ACME in Figure E8 shows a non-significant result in the ACME when the interaction term is included, and there does not seem to be any difference among less urban and more urban states. This overturns our initial expectations that more urban states are likely to experience a stronger effect of population size on democracy.

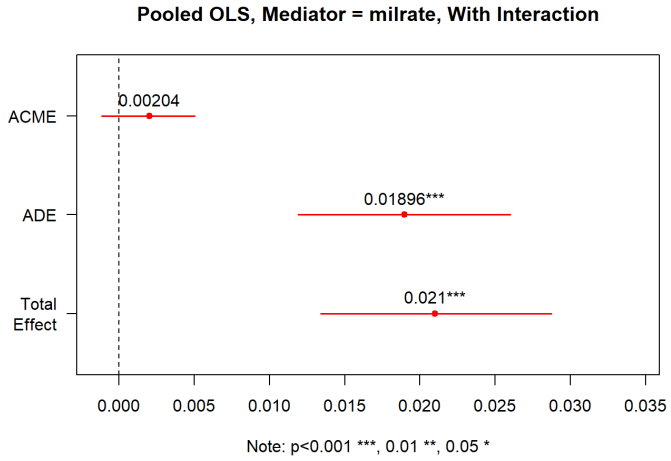

Figure E8: Conditional operation of coercive capacity.

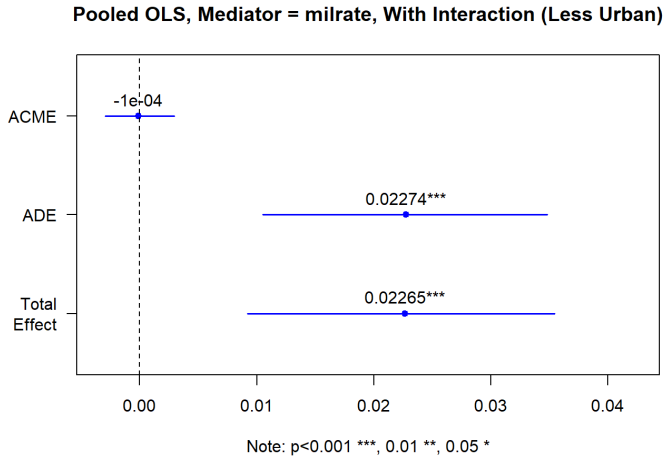

Figure E9: Conditional operation of coercive capacity inless urban states.

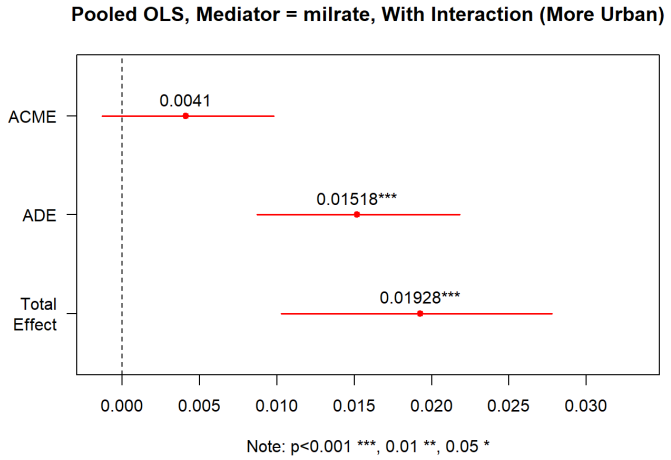

Figure E10: Conditional operation of coercive capacity in more urban states.

References

Poczter, S., & Pepinsky, T. B. (2016). Authoritarian Legacies in Post–New Order Indonesia: Evidence from a New Dataset. *Bulletin of Indonesian Economic Studies*, *52*(1), 77–100. https://doi.org/10.1080/00074918.2015.1129051