The Political U:
New Evidence on Democracy and Income

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Outline

1. Objectives and motivation
2. The economics of democracy
3. Econometric identification
4. Estimates and robustness
5. Conclusions

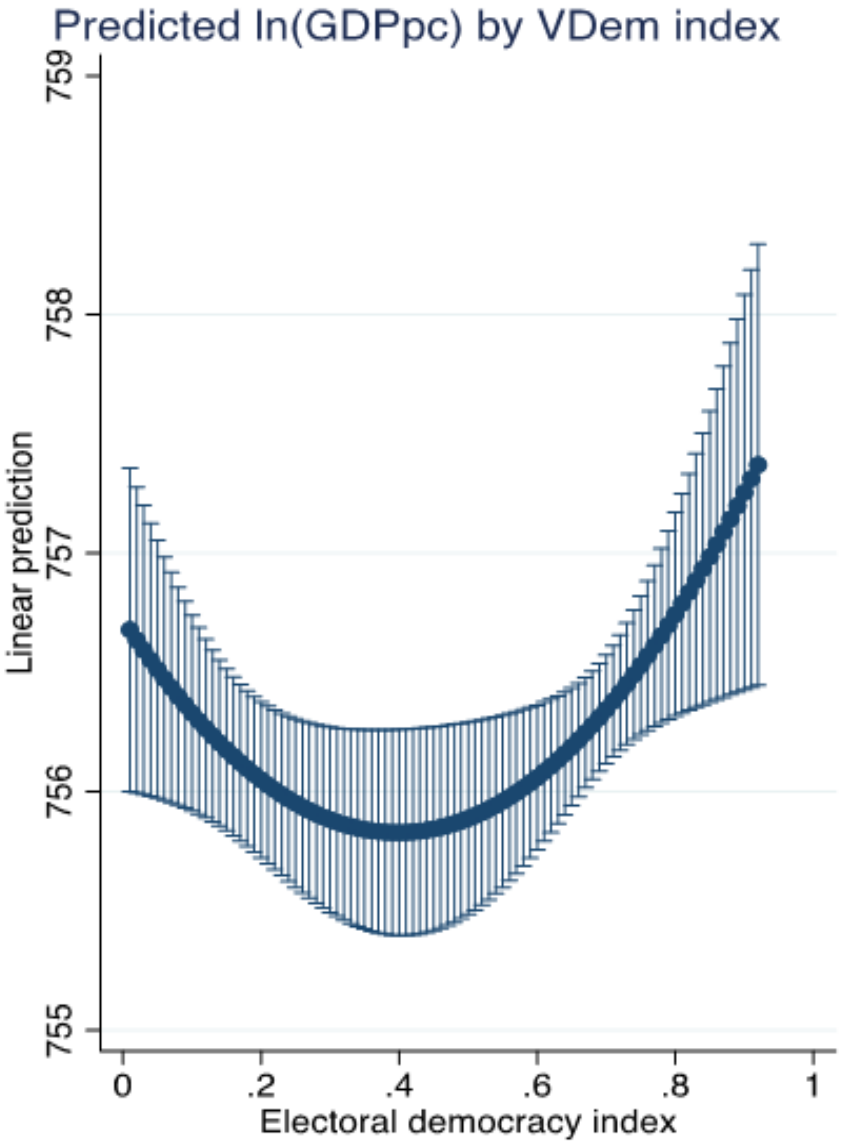
Main objective and motivation

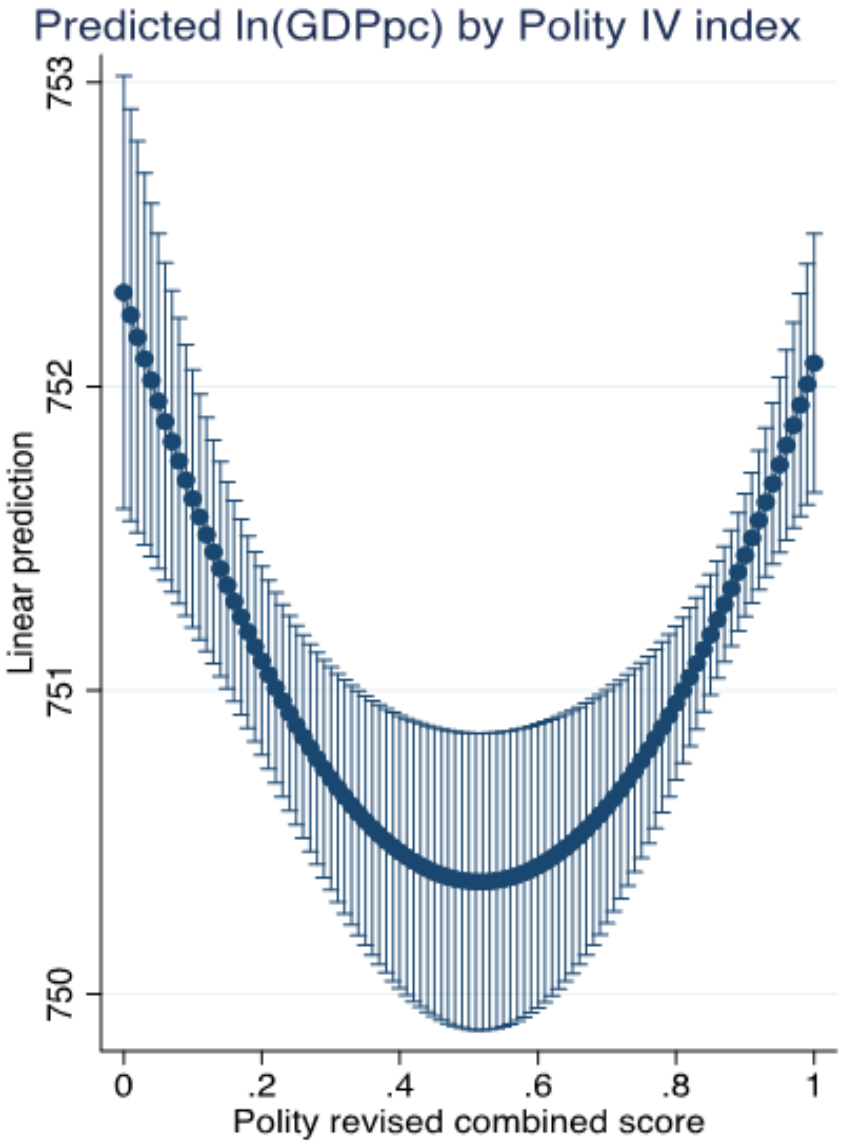
- The political regime possibly one of the key institutional dimension affecting growth and productivity
- Take stock *critically* of what economists know about democracy and growth
- Take on board latest from political science
- Emphasis on understanding the shape of the democracy-growth nexus
- Motivation: current democratic backsliding, populist tide

Main results

- Simple paper with a simple message
- Relationship between democracy and growth is causal but U-shaped
- “Intermediate” (or hybrid) political regimes perform significantly worse
- How much worse? 20 pct worse in the long run
- Why? Key channel is political instability

Stylized fact: ‘Political U’





The Economics of Democracy

Theory vs practice: Economics

- Econometric analysis favours linear/binary, but not econ theory!

- Acemoglu & Robinson (2008 AER): de jure and de facto democracies
- Bidner, Francois & Trebbi (2014 NBER): hybrid regimes
- Mukand & Rodrik (2020 EJ): taxonomy 6 main political regimes
- Acemoglu & Robinson (2022 APSR): despotic, weak & inclusive states

- Theory: associates intermediate/hybrid to (relatively) social unrest/political instability

- Reasoning: Political instability induces myopic behaviour (rent grabbing) disregarding long-term effects

Theory vs practice: Political science

• *"hybrid" regimes*	Diamond (2002)
• *"partial democracies"*	Epstein et al. (2006), Fearon (2011)
• *"defective democracies"*	Bogaards (2009), Croissant and Merkel (2019)
• *"illiberal democracies"*	Zakaria (1997)
• *"pseudo-democracies"*	Hyde (2020)
• *"semi-democracies"*	Knutsen and Nygård (2015)
• *"electoral autocracies"*	Shevtsova (2000)

Sample construction

We build a data set of 162 countries over 1960-2018:

- Political variables:
  - Many studies combine Polity and Freedom House with secondary sources or authors' adjustments → hard to replicate.
  - We combine Polity and Freedom House (higher comparability with previous studies) with V-DEM (wider coverage and increasingly used).
- Economic variables:
  - GDP per capita from World Bank Development Indicators
  - Night-lights as alternative to GDP per capita

Why the trichotomy?

- It better reflects political science literature (‘intermediate’/‘hybrid’ regimes)
- Allows for nonmonotonicity (unlike binary variables) while limiting the costs of defining too many categories (parsimonious classification)
- Allows us to combine different sources and democracy measures (and, implicitly, definitions of democracy)
- More important:

  It allows us to take into account ‘transitions’ (unlike continuous measures)

Transition probabilities

Probability of transitions [t → t+1]

	time t+1			
time t	Autocracy	Intermediate	Democracy	Total
Autocracy	95.1	4.8	0.2	100.0
Intermediate	2.8	94.8	2.4	100.0
Democracy	0.0	1.9	98.1	100.0

Probability of transitions [t → t+5]

	time t+5			
time t	Autocracy	Intermediate	Democracy	Total
Autocracy	79.5	18.1	2.5	100.0
Intermediate	10.6	81.0	8.5	100.0
Democracy	0.5	6.0	93.5	100.0

Probability of transitions [t → t+10]

	time t+10			
time t	Autocracy	Intermediate	Democracy	Total
Autocracy	65.9	27.8	6.4	100.0
Intermediate	14.4	73.1	12.5	100.0
Democracy	0.8	8.0	91.3	100.0

Probability of transitions [t → t+15]

	time t+15			
time t	Autocracy	Intermediate	Democracy	Total
Autocracy	53.3	35.8	11.0	100.0
Intermediate	15.7	68.2	16.2	100.0
Democracy	1.1	9.0	89.9	100.0

Democracy is the most stable regime. Autocracies and hybrid regimes have similar exit rates. Hybrid regimes are equally likely to move to democracy or autocracy. Transitions from one regime to the other significant change in Polity variable: for instance Autocracy-hybrid: from avg -7 to avg -2.4; hybrid-democracy from 6 to 7.7.

Econometric specification

Methodological framework

Two main specifications:

- Simple specification (pooled OLS) that controls for time-invariant or slow-moving country characteristics (e.g., legal origins, religion, geography, initial income levels) before introducing country F.E.:

$$y_{ct} = \alpha + \beta_1 Autocracy_{ct} + \beta_2 Democracy_{ct} + \sum_{i=1}^{p} \gamma_i x_c^{(i)} + \delta_t + \varepsilon_{ct}$$

- Elegant specification (Acemoglu et al., 2019) that uses country and year F.E. with a dynamic structure for GDP (i.e., lags):

$$y_{ct} = \beta_1 Autocracy_{ct} + \beta_2 Democracy_{ct} + \sum_{j=1}^{l} \theta_j y_{ct-j} + \alpha_c + \delta_t + \varepsilon_{ct}$$

The ‘Political U’ in the setting of Acemoglu et al. (2019)

Table 2 Effect of Democracy and Autocracy on (Log) GDP per Capita – lags, country and year fixed effects

Dep.Var.: (Log) GDP per Capita	WITHIN ESTIMATES				ARELLANO AND BOND ESTIMATES			
	(1-lags)	(2-lags)	(4-lags)	(8-lags)	(1-lags)	(2-lags)	(4-lags)	(8-lags)
Autocracy	0.597*	0.654**	0.636**	0.883***	0.693	0.571	0.785**	1.272***
	(0.313)	(0.251)	(0.252)	(0.291)	(0.448)	(0.381)	(0.374)	(0.413)
Democracy	0.475	0.595**	0.631**	0.653**	0.895	0.762	1.037**	1.112**
	(0.329)	(0.263)	(0.263)	(0.285)	(0.610)	(0.463)	(0.440)	(0.468)
log GDP first lag	0.975***	1.287***	1.256***	1.253***	0.949***	1.253***	1.232***	1.227***
	(0.005)	(0.037)	(0.036)	(0.037)	(0.007)	(0.040)	(0.038)	(0.037)
log GDP second lag		-0.316***	-0.220***	-0.228***		-0.299***	-0.209***	-0.220***
		(0.036)	(0.045)	(0.043)		(0.039)	(0.044)	(0.042)
log GDP third lag			-0.018	-0.009			-0.016	-0.007
			(0.027)	(0.026)			(0.026)	(0.026)
log GDP fourth lag			-0.050***	-0.063***			-0.054***	-0.060***
			(0.018)	(0.024)			(0.019)	(0.023)
p-value, lags 5–8				0.686				0.714
Long-run effect of autocracy	23.975*	22.555**	19.511**	23.357***	13.557	12.369	16.733**	24.641***
	(12.905)	(8.907)	(7.916)	(7.618)	(8.379)	(8.127)	(7.597)	(7.314)
Long-run effect of democracy	19.044	20.542**	19.338**	17.273**	17.506	16.494	22.122**	21.544**
	(12.517)	(8.739)	(7.809)	(7.305)	(11.733)	(10.092)	(9.205)	(9.046)
Effect of autocracy after 25 years	11.216*	14.917**	14.875**	19.058***	9.905	10.169	14.772**	22.290***
	(5.850)	(5.842)	(5.999)	(6.104)	(6.230)	(6.737)	(6.915)	(6.822)
Effect of democracy after 25 years	8.910	13.586**	14.742**	14.094**	12.790	13.560	19.530**	19.489**
	(6.046)	(5.865)	(5.990)	(5.901)	(8.602)	(8.256)	(8.169)	(7.880)
Persistence of GDP process	0.975***	0.971***	0.967***	0.962***	0.949***	0.954***	0.953***	0.948***
	(0.005)	(0.004)	(0.004)	(0.006)	(0.007)	(0.006)	(0.006)	(0.007)
AR2 test p-value					0.00	0.13	0.93	1.00
Observations	7671	7513	7193	6553	7509	7351	7031	6391
Countries in sample	162	162	162	162	162	162	162	162

This table reports the estimation results of the model specification represented by equation (2). It uses the trichotomous classification of political regimes described in Section 3. The reported coefficients of Autocracy and Democracy are multiplied by 100 to ease their interpretation. Columns 1–4 report the *within estimator* results. Columns 5–8 report *Arellano-Bond GMM* results. Columns 4 and 8 include eight lags of the dependent variable as controls, but for lags 5–8 only the p-value of a test for joint significance is reported. The *AR2 test p-value* is the p-value for a test of serial correlation in the residuals of the GDP series. Following Acemoglu et al. (2019) long-run effects and the effects over the next 25 years are also reported in the table (see footnote 12 for a description of their computation). Standard errors are clustered at the country level and are reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

The 'Political U': unpacking country F.E. [pooled OLS]

Table 1 Effect of Democracy and Autocracy on (Log) GDP per Capita – controlling for country slow-moving characteristics

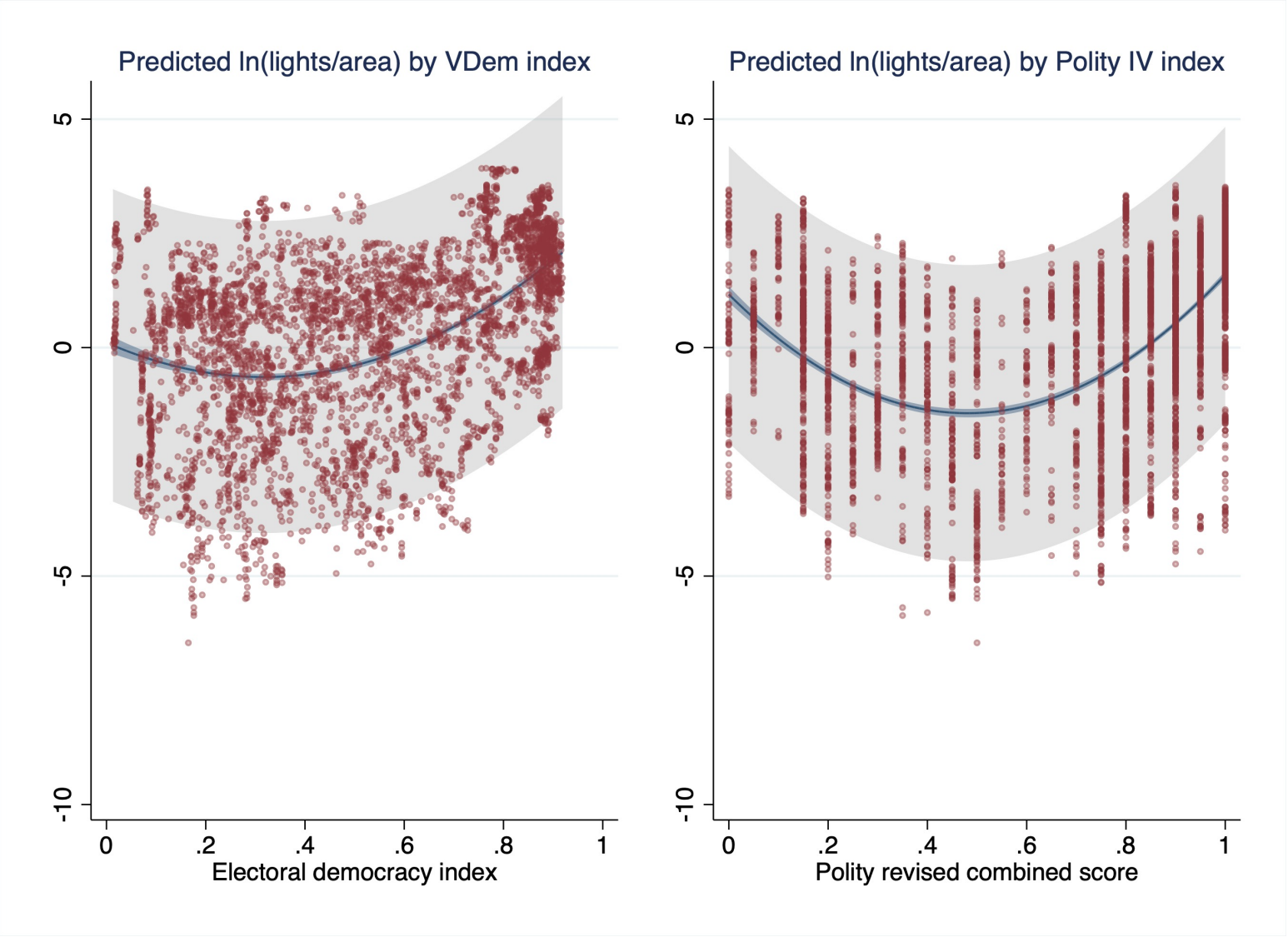
Dep.Var.: (Log) GDP per Capita	Pooled OLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Autocracy	5.174	8.217**	9.867***	16.032***	13.127***	16.570***	14.787***	15.635***
	[3.499]	[3.744]	[3.651]	[3.971]	[3.783]	[2.218]	[2.180]	[2.025]
Democracy	210.329***	209.483***	184.274***	205.165***	152.642***	31.065***	31.908***	39.627***
	[3.110]	[3.116]	[3.160]	[3.513]	[3.555]	[2.374]	[2.343]	[2.209]
English Legal Origin			-19.373***		37.885***	29.176***	34.306***	12.857***
			[3.033]		[3.744]	[2.193]	[2.210]	[2.978]
Socialist Legal Origin			-4.721		-23.208***	-38.493***	-61.378***	-112.528***
			[3.989]		[6.693]	[3.902]	[4.645]	[11.072]
Scandinavian Legal Origin			137.115***		173.438***	68.119***	70.287***	50.031***
			[7.263]		[13.567]	[8.276]	[7.979]	[8.308]
German Legal Origin			127.462***		116.915***	51.630***	52.226***	44.081***
			[7.511]		[7.686]	[4.604]	[4.392]	[4.623]
Religion: Protestant, %pop				0.396***	-1.055***	-0.779***	-0.623***	-0.490***
				[0.073]	[0.135]	[0.084]	[0.083]	[0.092]
Religion: Muslim, %pop				-0.331***	-0.394***	0.053*	-0.028	-0.376***
				[0.050]	[0.051]	[0.030]	[0.042]	[0.053]
Religion: Other, %pop				-1.037***	-1.205***	-0.087**	-0.078*	0.010
				[0.050]	[0.061]	[0.038]	[0.040]	[0.046]
Religion Fractionalization					37.958***	20.093***	28.672***	1.699
					[8.122]	[4.896]	[4.808]	[5.109]
Ethnic Fractionalization					-177.906***	-112.332***	-65.454***	-77.675***
					[6.256]	[3.733]	[3.993]	[4.230]
Colony						-28.579***	-11.765***	-1.466
						[2.302]	[2.548]	[3.090]
GDP per capita in 1960, ln						1.304***	1.012***	0.997***
						[0.012]	[0.017]	[0.018]
Year F.E.	NO	YES	YES	YES	YES	YES	YES	YES
Region F.E.	NO	NO	NO	NO	NO	NO	YES	(absorbed)
Region × initial regime F.E.	NO	NO	NO	NO	NO	NO	NO	YES
Observations	7826	7826	7826	6960	6514	6270	6270	6270
r2	0.41	0.41	0.46	0.46	0.57	0.86	0.88	0.90

This table reports the estimation results of the model specification represented by equation (1). It uses the trichotomous classification of political regimes described in Section 3. The reported coefficients are multiplied by 100 to ease their interpretation. *Legal Origin: French* and *Omitted Religion: Catholic* are the omitted categories chosen as the benchmark for the *Legal Origin* and *Religion* categories, respectively. In column (7), 7 regions are considered (World Bank classification): Africa; East Asia and the Pacific; Eastern Europe and Central Asia; Western Europe and other developed countries; Latin America and the Caribbean; the Middle East, and the North of Africa; South Asia. In column (8), following Acemoglu et al. (2019, Appendix A9.3), we introduce *region × initial regime* classification (in this case we have 34 region × regime cells). Initial regimes are based on country characteristics in 1960 (including: British colonies, French colonies, civil dictatorships, military dictatorships, mixed and presidential democracies, parliamentary democracies, royal dictatorships, and socialist regimes). Standard errors in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Do Autocracies lie on GDP data?

- Political U is a simple idea and most powerful criticism is equally simple:
- What if dictators lie?
- What if autocrats systematically manipulate GDP figures?
- Even compared to concerns about endogeneity, outliers, estimator choice, measurement of democracy and cross-time heterogeneity (all of which we address), this is potentially the most severe.

Night lights and the political U
(survives to potential misreporting by autocracies)



Night lights and the political U

Table 3 Effect of Democracy and Autocracy on Night Lights [1992-2018] – controlling for country slow-moving characteristics

Dep.Var.: lnNTL	Pooled OLS							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Autocracy	56.846***	71.584***	60.010***	110.570***	51.246***	21.729**	43.520***	46.968***
	[8.615]	[8.222]	[8.205]	[9.420]	[9.186]	[8.508]	[8.633]	[8.772]
Democracy	172.928***	172.760***	160.042***	211.932***	128.675***	32.903***	51.284***	36.544***
	[5.751]	[5.466]	[5.676]	[6.519]	[6.670]	[6.534]	[6.165]	[5.843]
English Legal Origin			-24.085***		63.922***	79.370***	51.588***	-44.225***
			[6.056]		[7.187]	[6.427]	[6.471]	[8.628]
Socialist Legal Origin			47.804***		-26.882**	-18.835*	-138.619***	-338.657***
			[6.698]		[11.970]	[10.594]	[13.474]	[29.660]
Scandinavian Legal Origin			18.017		290.735***	211.659***	214.903***	87.230***
			[15.970]		[27.610]	[24.793]	[23.250]	[23.757]
German Legal Origin			146.443***		136.217***	69.260***	77.556***	23.678*
			[15.255]		[15.065]	[13.279]	[12.484]	[13.237]
Religion: Protestant, %pop				-1.369***	-3.641***	-3.833***	-3.103***	-2.245***
				[0.152]	[0.267]	[0.245]	[0.234]	[0.257]
Religion: Muslim, %pop				-0.167*	-0.099	0.022	-0.787***	-1.084***
				[0.099]	[0.099]	[0.087]	[0.119]	[0.150]
Religion: Other, %pop				-0.842***	-1.143***	-0.293***	-0.367***	-0.142
				[0.098]	[0.119]	[0.112]	[0.114]	[0.132]
Religion Fractionalization					143.234***	111.228***	164.492***	60.602***
					[15.321]	[13.876]	[13.310]	[13.920]
Ethnic Fractionalization					-274.887***	-209.428***	-134.699***	-91.736***
					[12.244]	[11.068]	[11.423]	[11.861]
Colony						-57.221***	-23.099***	-23.633***
						[6.404]	[6.854]	[8.154]
GDP per capita in 1960, ln						0.971***	0.644***	0.916***
						[0.032]	[0.045]	[0.047]
Year F.E.	NO	YES	YES	YES	YES	YES	YES	YES
Region F.E.	NO	NO	NO	NO	NO	NO	YES	(absorbed)
Region × initial regime F.E.	NO	NO	NO	NO	NO	NO	NO	YES
Observations	4460	4460	4433	3735	3442	3172	3172	3172
r2	0.17	0.26	0.29	0.32	0.45	0.60	0.67	0.73

This table reports the estimation results of the model specification represented by equation (1). It uses the trichotomous classification of political regimes described in Section 3. The reported coefficients of Autocracy and Democracy are multiplied by 100 to ease their interpretation. The dependent variable (lnNTL) is the natural logarithm of the area-weighted average of a country's cell-level night-time-light digital number (Martinez, 2022). Lights data covering the period 1992-2018 are aggregated by Martinez (2022) starting from data on night-time light provided by the National Oceanic and Atmospheric Administration (NOAA). These data are then extended to 2018 using harmonized NTL data from DMSP-OLS and VIIRS instruments provided by Li et al. (2020). For additional information about other explanatory variables see Table 1. Standard errors are clustered at the country level and are reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Robustness and mechanisms

Robustness checks

A battery of tests confirms the robustness of our results:

- Alternative measures of democracy (e.g., only Polity)
- Alternative estimation methods (e.g., HHK)
- *IV* strategy using regional waves of democratization
- Controlling for cross-time heterogeneity (sub-periods)
- Excluding years after independence (decolonization phase)
- Controlling for (time variant) covariates
- Excluding influential observations (outliers)

Our results are still supportive of the 'Political U' !

Potential mechanism

Strongest evidence for social unrest and probability of major government crises as key characteristics of hybrid regimes → weak state capacity and political instability as the key determinants governing the non-monotonic relationship between political and economic development

	Dependent Variable:									
	Probability of Unrest		Probability of Major Government Crises		Market reforms		Clientelism		Corruption	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
A. Period 1960-2018										
Autocracy	-4.883**	-1.831	-7.917***	-6.257***	-1.134***	-0.376	0.003	0.006*	0.000	0.003
	(2.048)	(1.854)	(1.394)	(1.469)	(0.342)	(0.340)	(0.002)	(0.003)	(0.002)	(0.003)
Democracy	-8.584***	-8.630***	-4.428**	-5.260**	0.668	0.581	-0.003	-0.005**	-0.004**	-0.007***
	(2.174)	(2.413)	(1.943)	(2.286)	(0.448)	(0.462)	(0.002)	(0.002)	(0.002)	(0.002)
Lagged dep.var. (4 lags)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Lagged GDP per capita (4 lags)	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	7966	6815	7927	6784	5656	4558	8694	7102	8649	7077
Countries in sample	170	162	170	162	146	144	170	162	170	162
B. Period 1960-2010										
Autocracy	-5.225**	-2.492	-8.336***	-6.757***	-1.134***	-0.376	0.003	0.006*	-0.001	0.002
	(2.129)	(1.988)	(1.544)	(1.705)	(0.342)	(0.340)	(0.003)	(0.003)	(0.002)	(0.003)
Democracy	-10.609***	-10.884***	-7.465***	-8.178***	0.668	0.581	-0.004	-0.005*	-0.005**	-0.007***
	(2.515)	(2.834)	(1.957)	(2.283)	(0.448)	(0.462)	(0.002)	(0.003)	(0.002)	(0.002)
Lagged dep.var. (4 lags)	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Lagged GDP per capita (4 lags)	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Observations	6606	5620	6571	5593	5656	4558	7334	5907	7289	5882
Countries in sample	170	162	169	161	146	144	170	162	170	162

This table reports the estimation results of the model specification represented by equation (2) but substituting GDP per capita with alternative dependent variables, as reported in the header of each column. It uses the trichotomous classification of political regimes described in Section 3. Columns (1), (3), (5), (7) and (9) include four lags of the dependent variable as controls. Columns (2), (4), (6), (8) and (10) also include four lags of GDP per capita. In the top panel, estimation results are obtained considering the full sample (1960-2018). In the bottom panel, estimation results are obtained considering the subsample 1960-2010. Standard errors are clustered at the country level and are reported in brackets. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively.

Concluding remarks

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- Focusing on the behaviour of ‘hybrid’ political regimes better reflects political science research and bridges political science and economic research
- Our results do not contradict existing literature (“democracy is better than non-democracy”) but they complement it:
  - They help understand history: the democratization-growth process is not linear
  - They also open new interesting avenues for research

Future research

- Current democracy backsliding → populist leaders today move toward 'hybrid' regimes
- Theory: both democracies and autocracies limit the scope for political instability and 'short-termism', but a comprehensive theory for under-performance of intermediate regimes is still missing and difficult to formulate just because of their 'hybrid' and heterogenous nature
- Heterogeneity (both in time and across countries) opens as well interesting empirical issues: new frontier of econometrics of heterogeneity-robust treatment analysis (Diff in Diff): Zhang and Chausemartin (2021)
- Preliminary results indicate that the Political-U is robust to these new methods (using estimation proposed in de Chaisemartin, C., and D'Haultfoeuille, X. (2020b). "Difference-in-Differences Estimators of Intertemporal Treatment Effects.")