Economic Integration and the Transmission of Democracy[1]

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[1]The views expressed in this paper are those of the authors and do not necessarily reflect those of the International Monetary Fund, its Executive Board, or its Management.

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Motivation

- Evidence that experience with own democracy favors
  - Citizens' support for democracy
    (Acemoglu et al., 2021; Fuchs-Schundeln&Schundeln, 2015)
  - The consolidation of democratic institutions
    (Besley&Persson, 2019; Persson&Tabellini, 2009)

- Less is known about effects of exposure to other countries' institutions

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- Around the same time, many countries have become democratic
  - From 48 (out of 109) in 1960 to 121 (out of 166) in 2015

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- Citizens of non-democratic countries indirectly exposed to democratic institutions of their trade partners

- Does economic integration promote the transmission of democracy?

This Paper

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- Assemble a large country-year panel dataset from 1960 to 2015

- Predict economic integration using a *time-varying* gravity equation
  - Relative improvements in air vs sea transportation (Feyrer, 2019)
  - Different country-pairs differentially affected due to geographic location

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  - Citizens' attitudes towards democracy
  - Countries' democracy scores

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- Interpret results as the effect of economic integration
  - Our variation does not capture FDIs and migration
  - Yet, it might include business travel, tourism, and idea flows
  - Refer to "trade" for brevity

Main Findings

- Trade w/ democracies improves citizens' support for democracy
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- Our interpretation: transmission of democratic capital

- Evidence against alternative mechanisms
  - Income growth, human capital accumulation, redistributional effects
  - Change in citizens' beliefs due to faster democratic transitions
  - Pressure from trade partners

Road Map

Data

- Unbalanced panel of countries, 1960 to 2015
    - Drop land-locked countries (to construct predicted trade)

- Support for democracy from *Integrated Value Survey*

- *Polity2* democracy score (-10 to +10) from *Polity5 Project*

- Bilateral trade flows from *IMF DoT statistics*
    - For each country-pair, observe imports and exports twice
    - Trade measured as the average of the 4 quantities

- Air and sea distances from *CEEPI* and *vesseldistance.org*

Sample   Trends

Individual-Level Analysis

- Individual k in country i, born in year b, interviewed in year t

$$y_{kibt} = \alpha_{it} + \alpha_b + \beta_d T^D_{ibt} + \beta_a T^A_{ibt} + X_{kibt} + u_{kibt} \qquad (1)$$

  - y_{kibt}: attitudes towards democracy
  - α_{it}, α_b: country by survey year and birth year fixed effects
  - X_{kibt}: individual controls and democratization waves

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- T^D_{ibt}, T^A_{ibt}: log trade over GDP during impressionable years (16-24)

$$T^p_{ib} = \log\left[\frac{1}{9}\sum_{r=1}^{9}\left(\frac{\tilde{T}^p_{ib+15+r}}{GDP_{ib+15+r}}\right)\right] \text{ for } p \in \{A, D\} \qquad (2)$$

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- Attitudes towards democracy available from 1995
  - Trade exposure (and democratization waves) from 1960

Country-Level Analysis

- Consider 5-year intervals from 1960 to 2015

$$y_{it} = \alpha_i + \delta_t + \beta_d T_{it}^D + \beta_a T_{it}^A + W_{it} + u_{it} \qquad (3)$$

- y_{it}: *Polity2* score of country i in year t
- T_{it}^p: log of trade-GDP ratio w/ partner $p \in \{A, D\}$
- α_i, δ_t: country and year fixed effects
- W_{it}: democratization waves

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  - W_{it}: democratization waves

- Focus on 5-year periods
  - Slow-moving nature of democracy
  - 2SLS strategy based on gradual diffusion of technology
- Identical results when estimating yearly regressions

Instrument for Trade: Overview

- Exploit change in relative importance of air vs sea distance
  - Follow recent work by Feyrer (2019; 2021)
  - Similar approach in Pascali (2017) for sail vs steam

- Technological change $\implies$ ↑ efficiency of air transportation
  - Differential effect across country-pairs (Japan-Germany vs Japan-US)
  - Technological change exogenous to any specific country

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- Estimate time-varying gravity equation (Anderson&Van Wincoop, 2003)
  - Predicted bilateral trade flows, aggregated to the country level

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  - Predicted bilateral trade flows, aggregated to the country level

- Air transportation might also foster migration, FDIs, and ideas
  - Rule out correlation b/w IV and migration or FDIs
  - Yet, results interpreted as effects of "economic integration"

Gravity Equation

Estimated Trade Elasticities
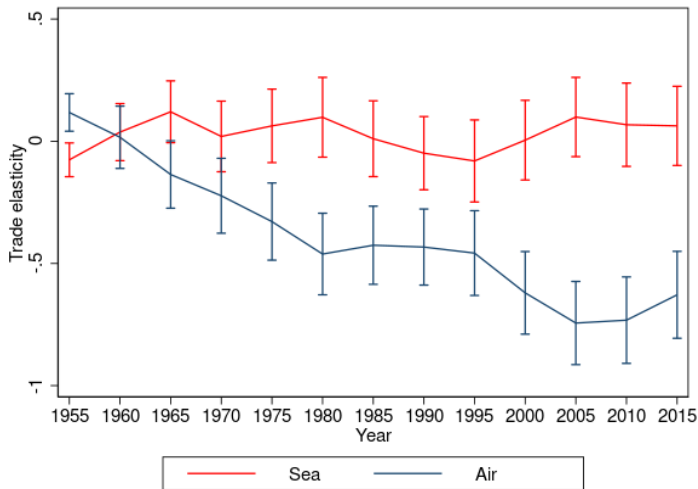
Importance of air transportation ↑ over time

- Obtain predicted trade as

$$\tilde{T}_{it} = \sum_{j \neq i} \omega_{ij} e^{\left[\hat{\beta}_q^{Sea} \ln\left(dist_{ij}^{Sea}\right) + \hat{\beta}_q^{Air} \ln\left(dist_{ij}^{Air}\right)\right]} \tag{4}$$

Recovering Predicted Trade

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- Exploit only change in importance of air vs sea transportation

- ω_{ij}: trade shares at baseline to increase IV precision
  - Constructed using first 5-years of trade for each country-pair
  - Robust to using only partners' characteristics at baseline or no weights

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- ω_{ij}: trade shares at baseline to increase IV precision
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- Scale predicted trade by 5-year lagged GDP
  - IV for T_{it}^p by summing predicted trade over partners $p \in \{A, D\}$
  - Lagged partners' institutions to reduce endogeneity concerns

Dependent variable:	Democratic Political System *(Mean: 339.3)*	
	OLS (1)	OLS (2)
Exposure democracies	2.180** (0.968)	2.389** (1.060)
Exposure autocracies	-1.546** (0.652)	-1.553** (0.646)
Observations	225,811	225,811
Clusters	74	74
Democratization waves		X
Country FE	X	X
Survey Year FE	X	X
Birth Year FE	X	X
Region-Survey Year FE		
Country-Survey Year FE		
K-P F-stat		
SW F-stat (Demo Trade)		
SW F-stat (Auto Trade)		

Alternative Measures   Afrobarometer   Figure

Trade w/ Democracies Improves Citizens' Attitudes

Dependent variable:	Democratic Political System *(Mean: 339.3)*					
	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)
Exposure democracies	2.180** (0.968)	2.389** (1.060)	5.580** (2.674)	5.177** (2.474)	5.186** (2.455)	5.682** (2.490)
Exposure autocracies	-1.546** (0.652)	-1.553** (0.646)	-0.897 (1.622)	-0.950 (1.555)	0.248 (1.739)	0.729 (1.725)
Observations	225,811	225,811	225,811	225,811	225,811	225,811
Clusters	74	74	74	74	74	74
Democratization waves		X		X	X	X
Country FE	X	X	X	X	X	
Survey Year FE	X	X	X	X		
Birth Year FE	X	X	X	X	X	X
Region-Survey Year FE					X	
Country-Survey Year FE						X
K-P F-stat			7.479	8.872	8.670	8.299
SW F-stat (Demo Trade)			20.07	26.36	25.22	23.50
SW F-stat (Auto Trade)			21.87	22.49	22.26	21.41

Alternative Measures Afrobarometer Figure

- Transmission of democratic capital $\implies$ change in citizens' attitudes

Mechanisms

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Alternative interpretations

- Earlier democratic transitions $\implies$ exposure to *own* democracy
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- Redistribution of resources (Acemoglu et al., 2005)
  - Evidence below not consistent with this channel

Alternative Mechanisms   Heterogeneous Effects   Exclusion Restriction

Road Map

Trade w/ Democracies Increases Democracy

			Dependent variable: *Polity 2*	
	OLS	OLS	2SLS	2SLS
	(1)	(2)	(3)	(4)
Log(Trade democracy/GDP)	1.743***	1.412**	4.576**	4.805**
	(0.558)	(0.553)	(2.155)	(2.143)
Log(Trade autocracy/GDP)	-0.574**	-0.561**	0.163	0.916
	(0.278)	(0.257)	(1.133)	(1.105)
Observations	1,192	1,192	1,192	1,192
Clusters	116	116	116	116
Country FE	X	X	X	X
Year FE	X	X	X	X
Democratization waves		X		X
Sample	Full	Full	Full	Full
K-P F-stat		14.12	5.316	6.234
SW F-stat (Demo Trade)			12.19	13.48
SW F-stat (Auto Trade)			16.76	20.32

Figure

Results Driven by Baseline Non-Democracies

			Dependent variable: *Polity 2*			
	OLS (1)	OLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)
Log(Trade democracy/GDP)	1.743*** (0.558)	1.412** (0.553)	4.576** (2.155)	4.805** (2.143)	7.339** (2.960)	-1.839 (4.341)
Log(Trade autocracy/GDP)	-0.574** (0.278)	-0.561** (0.257)	0.163 (1.133)	0.916 (1.105)	-0.035 (1.190)	1.111 (1.589)
Observations	1,192	1,192	1,192	1,192	553	639
Clusters	116	116	116	116	55	61
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
Democratization waves		X		X	X	X
Sample	Full	Full	Full	Full	Baseline Autocracies	Baseline Democracies
K-P F-stat		14.12	5.316	6.234	3.398	3.025
SW F-stat (Demo Trade)			12.19	13.48	8.144	7.352
SW F-stat (Auto Trade)			16.76	20.32	14.03	9.166

Figure

Transmission of Democratic Capital

Regression coefficient = 9.898
Clustered standard errors = 4.085

Polity2 Score (y-axis)
Trade-induced democratic capital (x-axis)

Equations

- Results unchanged when controlling for lagged GDP

- No increase in educational attainment
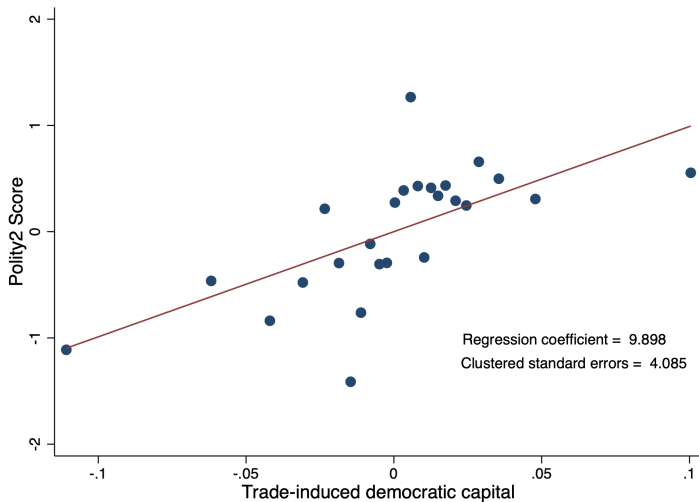
Evidence Against Alternative Mechanisms

- Results unchanged when controlling for lagged GDP

- No increase in educational attainment

- Effects larger where the elites are more likely to benefit
  - Rents from natural resources

- Effects similar for countries w/ comparative advantage in services or manufacturing
  - Unlikely that trade benefited mostly the middle-class

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- Evidence against pressure from (democratic) trade partners

GDP and Human Capital | Heterogeneous Effects | Pressure from Partners | Industry Level Trade

Robustness Checks

- Drop outliers and specific countries (former USSR; US; China; EU)

- Use alternative measures of attitudes and democracy

- Use different definitions of impressionable years

- Interact baseline country controls with year dummies

- IV constructed with alternative weights, or no weights

- Use PPML to estimate the gravity equation

Road Map

1. Data and Empirical Strategy

2. Economic Integration and Citizens' Beliefs

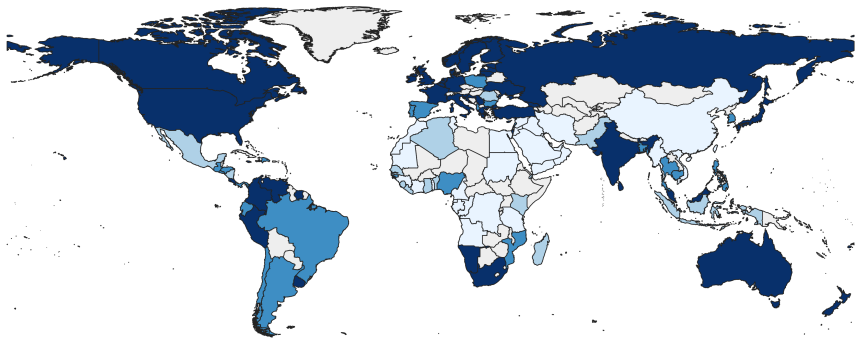3. Economic Integration and Democracy

4. **Conclusions**

- Predict economic integration w/ improvements in air transportation

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- Many open questions (which we plan to investigate)
  - What do individuals learn about other countries' institutions?
  - Do the effects depend on partners' economic performance?
  - Does cultural proximity favor institutional transmission?
  - Can we disentangle the role of people and ideas from that of goods?

- The emergence of China into the global economy makes these questions especially important

BACK-UP SLIDES

Years in democracy (over years in sample)
- 0.00 - 0.25
- 0.25 - 0.50
- 0.50 - 0.75
- 0.75 - 1.00
- Not in sample

Our Sample: 1960

Autocracy
Democracy
Not in sample

Our Sample: 2015

Legend:
- Autocracy
- Democracy
- Not in sample
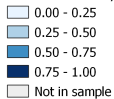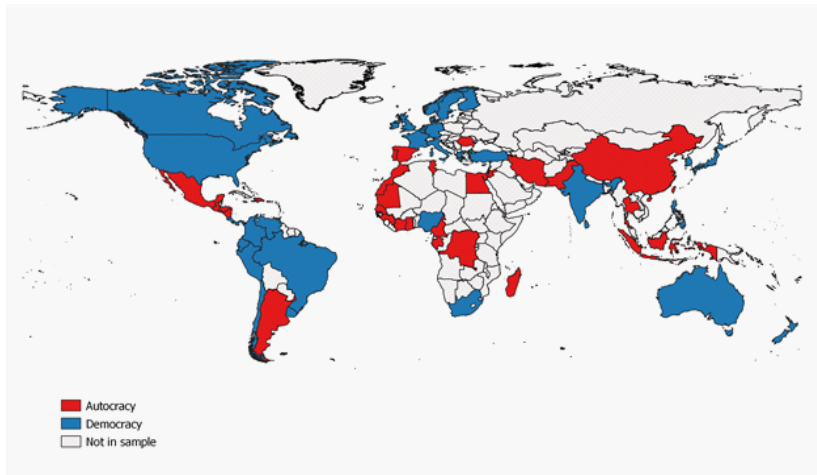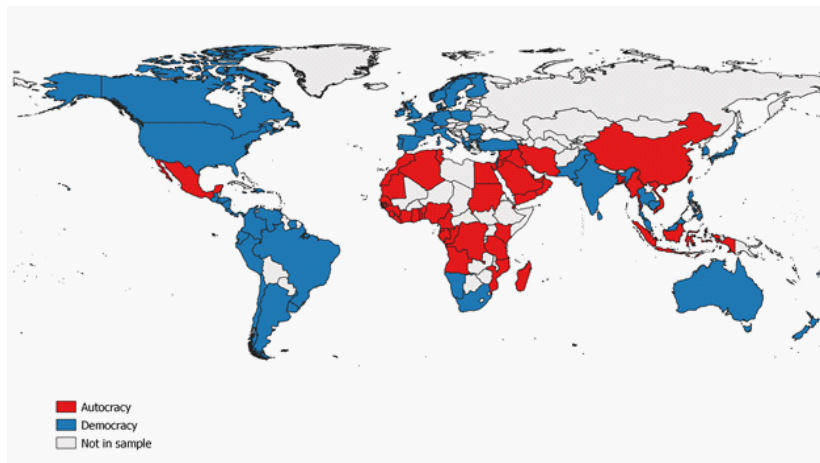
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Sample Composition, by Decade

	1960	1970	1980	1990	2000	2010	2015
Mean *Polity2*	1.803	-0.478	-0.903	1.702	3.816	4.487	4.791
Median *Polity2*	4.5	-2	-5	4.5	6	7	7
Countries	66	92	103	104	114	115	115
Democracies	37	40	40	59	78	84	90
Autocracies	29	52	63	45	36	31	25
Baseline Democracies	37	44	44	45	54	54	54
Baseline Autocracies	29	48	59	59	60	61	61

Gravity Step

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  - Partners and world GDPs and country specific resistance terms
  - Bilateral resistance term, τ_{ijq}

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  - Partners and world GDPs and country specific resistance terms
  - Bilateral resistance term, τ_{ijq}

- Express τ_{ijq} as a *time-varying* function of air and sea distance

$$\tau_{ijq} = \beta_q^{Sea} \log\left(dist_{ij}^{Sea}\right) + \beta_q^{Air} \log\left(dist_{ij}^{Air}\right) \tag{5}$$

  - $dist_{ij}^{Sea}$ and $dist_{ij}^{Air}$: bilateral distance, by sea and air
  - β_q^{Sea}, β_q^{Air} vary every 5 years, to capture (gradual) technological change

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  - β_q^{Sea}, β_q^{Air} vary every 5 years, to capture (gradual) technological change

- Then, for 1955-2015, estimate at yearly frequency

$$\log \left(trade_{ijt} \right) = \gamma_{it} + \gamma_{jt} + \gamma_{ij} + \tau_{ijq} + \varepsilon_{ijt} \qquad (6)$$

  - Robust to using Pseudo Poisson Maximum Likelihood estimator

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Alternative Measures of Attitudes
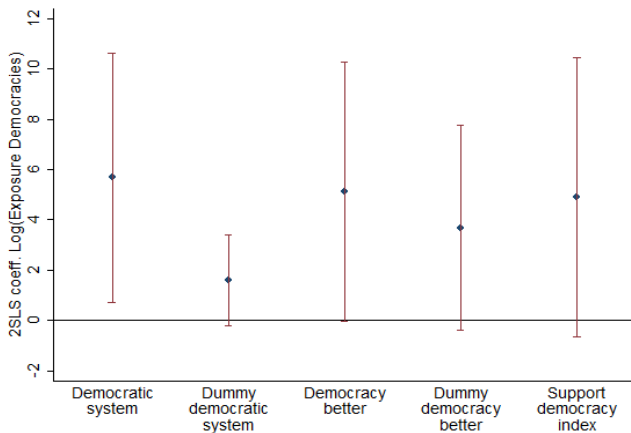
Including Countries in Afrobarometer

Dep. variable:	*Dummy Democratic Political System*			
	(1)	(2)	(3)	(4)
Exposure democracies	3.558**	3.807**	3.757**	3.326**
	(1.727)	(1.742)	(1.612)	(1.654)
Exposure autocracies	0.173	0.116	0.601	0.420
	(1.123)	(1.136)	(0.928)	(0.836)
Observations	225,811	225,811	309,759	334,242
Clusters	74	74	90	90
Demo waves	X	X	X	X
Birth Year FE	X	X	X	X
Country-Survey Year FE	X	X	X	X
Income of respondent	X			
K-P F-stat	8.299	8.576	8.301	6.571
SW F-stat Demo	23.50	29.07	27.60	15.72
SW F-stat Auto	21.41	19.74	19.82	18.37
Afrobarometer countries			X	X
Dep. variable mean	51.24	51.24	55.60	57.81

Exposure to Democracy and Attitudes
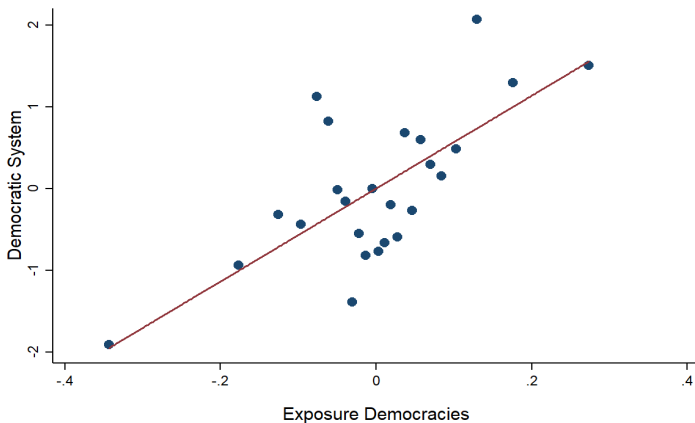
Regression coefficient= 5.682
Clustered standard errors= 2.490

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Alternative Mechanisms

Dep. variable:	Democratic Political System *(Mean: 339.3)*							
	2SLS (1)	2SLS (2)	2SLS (3)	2SLS (4)	2SLS (5)	2SLS (6)	2SLS (7)	2SLS (8)
Exposure democracies	5.682** (2.490)	5.382** (2.577)	5.230* (2.625)	6.585** (3.285)	6.013** (2.845)	5.855** (2.569)	6.671** (3.086)	7.437** (3.026)
Exposure autocracies	0.729 (1.725)	0.643 (1.843)	0.617 (1.815)	0.911 (1.928)	0.762 (1.791)	0.852 (1.729)	0.305 (2.153)	-0.152 (2.120)
Observations	225,811	224,468	224,591	225,811	225,811	225,811	212,999	212,999
Clusters	74	74	74	74	74	74	70	70
Demo waves	X	X	X	X	X	X	X	X
Birth Year FE	X	X	X	X	X	X	X	X
Country-Survey Year FE	X	X	X	X	X	X	X	X
Exposure Years		Polity2 Formative	Polity2 15+	GDP growth Formative	GDP growth 15+	Demo wave 15+	Education Formative	Education 15+
K-P F-stat	8.299	8.576	8.301	6.571	8.306	7.693	5.608	5.582
SW F-stat Demo	23.50	29.07	27.60	15.72	21.91	21.20	14.24	14.14
SW F-stat Auto	21.41	19.74	19.82	18.37	21.95	20.81	17.30	17.39

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Heterogeneous Effects

Dependent variable:	Democratic Political System					
	Female (1)	Male (2)	Young (3)	Old (4)	Poor (5)	Rich (6)
Exposure democracies	**2.905**	**8.585*****	**5.986***	**0.841**	**5.107***	**6.358****
	(2.702)	**(3.169)**	**(3.381)**	**(4.754)**	**(2.573)**	**(2.878)**
Exposure autocracies	-0.571	1.937	0.647	-0.899	0.590	0.851
	(1.691)	(1.991)	(1.729)	(3.881)	(1.732)	(1.957)
Observations	113,606	112,205	138,269	87,536	137,122	88,689
Clusters	74	74	74	71	74	74
Democratization waves	X	X	X	X	X	X
Birth Year FE	X	X	X	X	X	X
Country-Survey Year FE	X	X	X	X	X	X
K-P F-stat	8.978	7.555	4.865	4.920	7.705	8.538
SW F-stat (Demo Trade)	25.95	21.36	19.79	31.95	20.45	27.25
SW F-stat (Auto Trade)	21.21	21.46	9.098	10.51	20.11	20.17
Dep. variable mean	337.5	341	335.6	345	336.1	344.2

Instrument Uncorrelated w/ FDIs and Migration

Partners:	All				Democratic	Autocratic
	Dependent variable: *Log(Predicted trade/GDP)*					
	(1)	(2)	(3)	(4)	(5)	(6)
Log(Trade/GDP)	**0.201****	**0.214*****	**0.203****	**0.216*****		
	(0.080)	**(0.078)**	**(0.080)**	**(0.079)**		
	[0.044]	**[0.047]**	**[0.044]**	**[0.047]**		
Log(Migration/Pop)		-0.044		-0.044		
		(0.034)		(0.034)		
		[-0.020]		[-0.020]		
Log(FDI/GDP)			-0.312	-0.237		
			(0.553)	(0.560)		
			[-0.003]	[-0.002]		
Log(**Trade democracy**/GDP)					**0.261*****	-0.105
					(0.092)	(0.106)
					[0.057]	[-0.021]
Log(**Trade autocracy**/GDP)					-0.059	**0.404*****
					(0.045)	**(0.060)**
					[-0.022]	**[0.136]**
Log(Migr. democracy/Pop)					-0.018	-0.037
					(0.028)	(0.041)
					[-0.009]	[-0.017]
Log(Migr. autocracy/Pop)					-0.041*	-0.049*
					(0.023)	(0.028)
					[-0.026]	[-0.029]
Observations	648	648	648	648	648	648
Clusters	109	109	109	109	109	109
Country FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X
Democratization waves	X	X	X	X	X	X

Trade w/ Democracies Increases Democracy
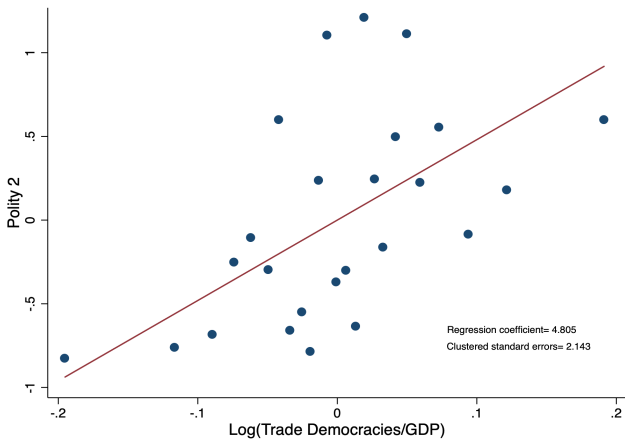
Constructing Trade-Induced Democratic Capital

- For each trade partner j, define

$$\omega_{ijt} = \frac{T_{ijt}}{\sum_{j \neq i} T_{ijt}}$$

- Let D_{jt-1} be the lagged Polity2 score of partner j, divided by 10
  - Set $D_{jt-1} = 0$ if $Polity2 \leq 0$, so that $D_{jt-1} \in [0, 1]$

- Trade-induced democratic capital: $TD_{it} = \sum_{j \neq i} \omega_{ijt} D_{jt-1}$
  - Construct corresponding instrument using predicted values
  - Results unchanged when using baseline democratic capital from Persson&Tabellini (2009)

- Estimate 2SLS regression of the form:

$$y_{it} = \alpha_i + \delta_t + \beta TD_{it} + X_{it} + u_{it}$$

Similar Results with Lagged Income and Population

Dependent variable:	*Polity 2*				
	(1)	(2)	(3)	(4)	
Log(Trade democracy/GDP)	**4.805****	**5.278****	**5.373****	**4.654****	
	(2.143)	**(2.356)**	**(2.375)**	**(2.135)**	
Log(Trade autocracy/GDP)	0.916	0.958	0.726	0.888	
	(1.105)	(1.181)	(1.400)	(1.254)	
Log(GDP)		0.175	0.065		
		(0.582)	(0.638)		
Log(Population)			1.039		
			(1.931)		
Log(GDP per capita)				-0.065	
				(0.685)	
Observations	1,192	1,192	1,192	1,192	
Clusters	116	116	116	116	
Country FE	X	X	X	X	
Year FE	X	X	X	X	
Democratization waves	X	X	X	X	
K-P F-stat	8.081	8.354	8.319	9.605	
SW F-stat (Demo Trade)	18.84	20.12	20.60	24.61	
SW F-stat (Auto Trade)	45.21	37.03	27.80	27.96	

No Increase in Educational Attainment

Dependent variable:			Polity 2		Avg. years of schooling
	(1)	(2)	(3)	(4)	(5)
Log(Trade democracy/GDP)	**4.805****	**5.278****	**5.373****	**4.654****	**-1.675***
	(2.143)	**(2.356)**	**(2.375)**	**(2.135)**	**(0.849)**
Log(Trade autocracy/GDP)	0.916	0.958	0.726	0.888	-0.156
	(1.105)	(1.181)	(1.400)	(1.254)	(0.238)
Log(GDP)		0.175	0.065		
		(0.582)	(0.638)		
Log(Population)			1.039		
			(1.931)		
Log(GDP per capita)				-0.065	
				(0.685)	
Observations	1,192	1,192	1,192	1,192	1,067
Clusters	116	116	116	116	102
Country FE	X	X	X	X	X
Year FE	X	X	X	X	X
Democratization waves	X	X	X	X	X
K-P F-stat	8.081	8.354	8.319	9.605	3.278
SW F-stat (Demo Trade)	18.84	20.12	20.60	24.61	6.796
SW F-stat (Auto Trade)	45.21	37.03	27.80	27.96	15.08

Heterogeneity
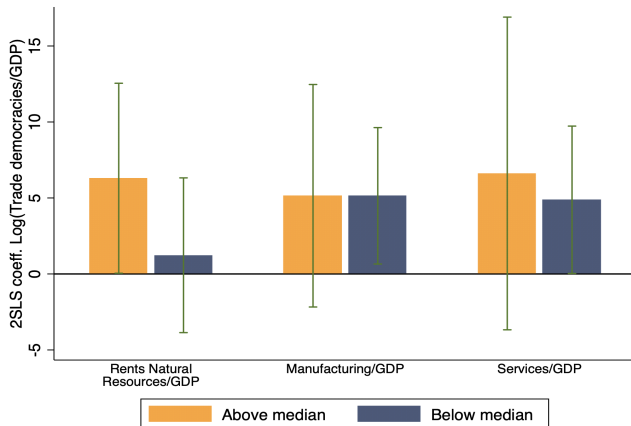
Evidence Against Pressure from Partners

	Dependent variable: *Polity 2*			
	(1)	(2)	(3)	(4)
Panel A. Time invariant dummy by year FE				
Log(Trade democracy/GDP)	4.805**	6.840**	4.258**	6.098**
	(2.144)	(2.732)	(2.129)	(2.418)
Log(Trade autocracy/GDP)	0.916	1.358	1.151	1.476
	(1.106)	(1.194)	(1.123)	(1.176)
K-P F-stat	6.229	4.991	6.314	5.645
SW F-stat (Demo Trade)	13.47	10.66	13.15	12
SW F-stat (Auto Trade)	20.31	19.37	19.70	19.67
Panel B. Time varying dummy				
Log(Trade democracy/GDP)	4.805**	6.673**	4.443*	6.130**
	(2.144)	(2.636)	(2.263)	(2.416)
Log(Trade autocracy/GDP)	0.916	1.421	1.004	1.547
	(1.106)	(1.141)	(1.121)	(1.133)
K-P F-stat	6.229	5.432	5.978	5.990
SW F-stat (Demo Trade)	13.47	11.23	12.44	12.52
SW F-stat (Auto Trade)	20.31	21.24	20.60	21.25
Interventions		CIA	KGB	CIA or KGB
Observations	1,192	1,192	1,192	1,192
Clusters	116	116	116	116
Country FE	X	X	X	X
Year FE	X	X	X	X
Democratization waves	X	X	X	X

No Convergence on UN Voting Patterns

	(1)	(2)	(3)	(4)
Panel A. Dep. variable: Distance of own vote from avg. democracies				
Log(Trade democracy/GDP)	-0.020	-0.050	-0.035	-0.008
	(0.084)	(0.085)	(0.207)	(0.136)
Log(Trade autocracy/GDP)	-0.003	0.078**	0.061	0.051
	(0.027)	(0.032)	(0.081)	(0.034)
Observations	1,167	1,166	583	584
Clusters	115	115	57	58
K-P F-stat	5.836	5.879	3.522	2.729
SW F-stat Demo	12.02	12.02	10.84	6.878
SW F-stat Auto	18.76	18.76	5.777	12.17
Panel B. Dep. variable: Distance of own vote from US				
Log(Trade democracy/GDP)	0.017	0.021	-0.051	0.016
	(0.064)	(0.051)	(0.188)	(0.038)
Log(Trade autocracy/GDP)	-0.035	-0.025**	-0.049	-0.006
	(0.022)	(0.012)	(0.063)	(0.017)
Observations	1,155	1,154	571	584
Clusters	114	114	56	58
K-P F-stat	5.711	4.324	3.643	2.729
SW F-stat Demo	11.66	9.475	10.07	6.878
SW F-stat Auto	18.98	16.39	5.996	12.17
Country FE	X	X	X	X
Year FE	X	X	X	X
Democratization waves	X	X	X	X
Sample	Full	Full	Baseline democracies	Baseline autocracies

Autocracies' Imports, by Partner and Industry

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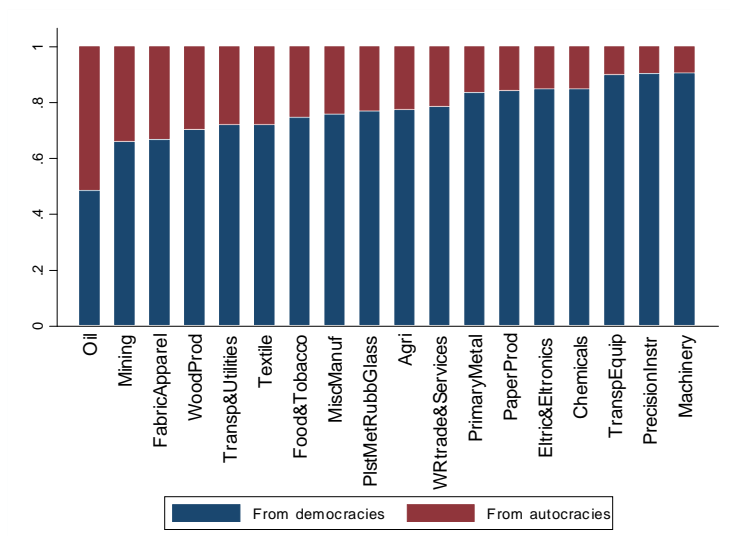
Autocracies' Exports, by Partner and Industry

(back)