

Supplementary Materials for
Institutional Quality and Pandemic Resilience:
Cross-Country Evidence on Health and Economic
Outcomes
during COVID-19

Diego A. Diaz*, Cristian Larroulet, Andres Marticorena

School of Business and Economics, Universidad del Desarrollo

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Supplementary Figures

Supplementary Figure [S1](#) plots the bivariate association between the WGI composite and reported COVID-19 deaths per million. Supplementary Figure [S2](#) shows the corresponding relationship for excess mortality, Supplementary Figure [S3](#) shows the relationship for end-2021 full vaccination coverage, and Supplementary Figure [S4](#) shows the relationship for GDP growth in 2020.

Supplementary Figure [S5](#) summarizes correlations between the individual WGI dimensions and the main pandemic outcomes. Supplementary Figure [S6](#) compares the evolution of the

*Corresponding author: Diego A. Diaz. Email: diegodiaz@uchicago.edu.

OxCGRT Stringency Index in Chile and selected Latin American peers.

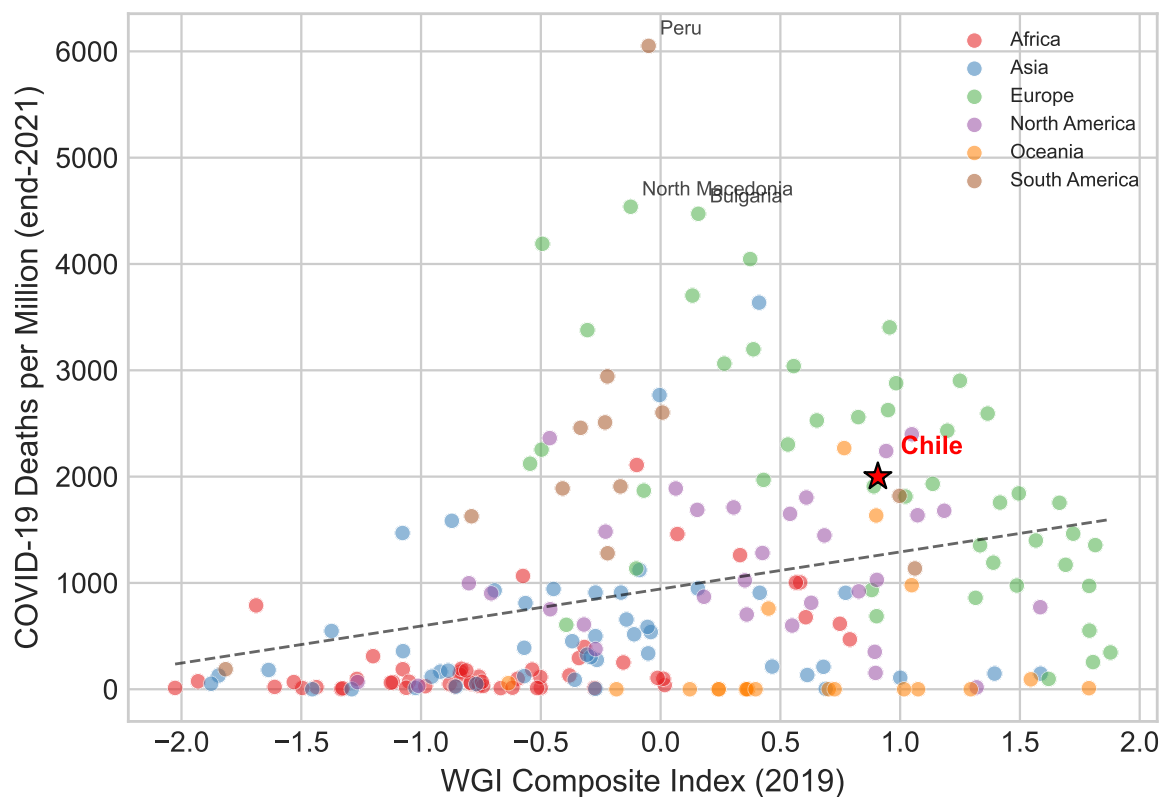


Figure S1: WGI Composite Index vs. COVID-19 Deaths per Million. Each point represents a country, colored by continent. Chile is highlighted with a red star. The dashed line is the OLS fit.

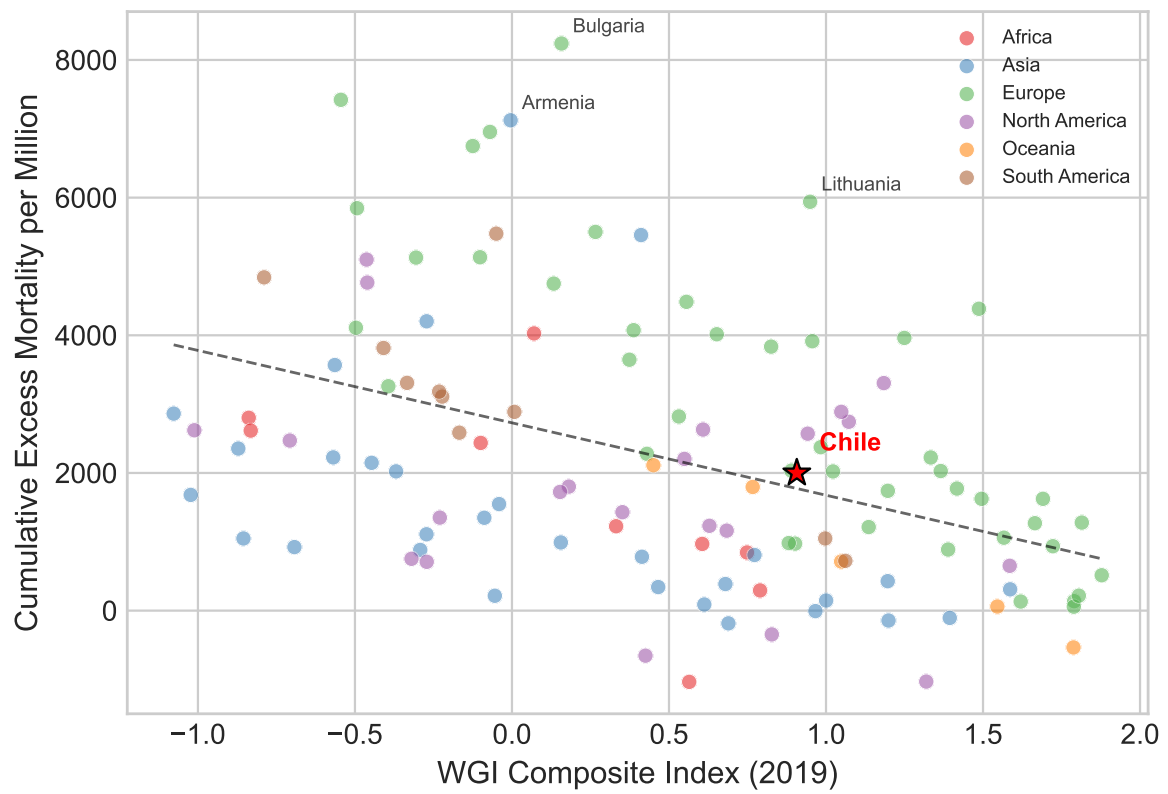


Figure S2: WGI Composite Index vs. Excess Mortality per Million

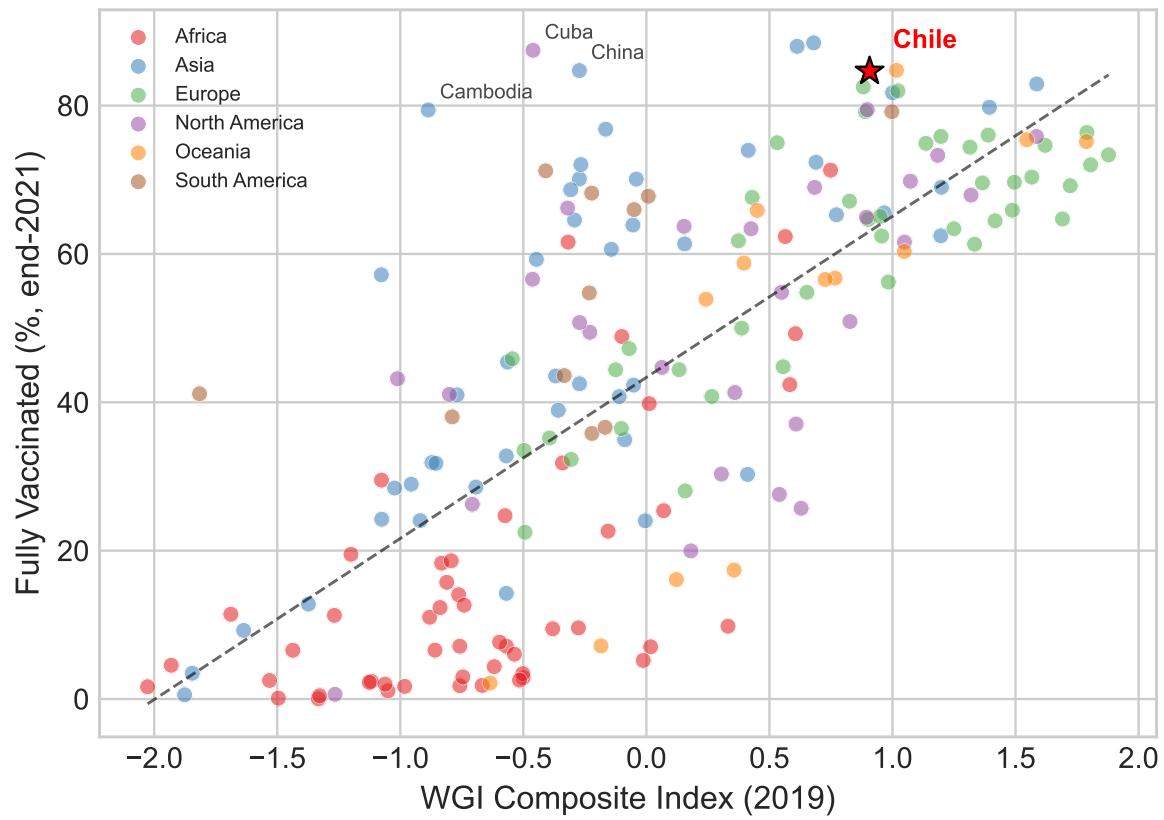


Figure S3: WGI Composite Index vs. Vaccination Rate (% Fully Vaccinated)

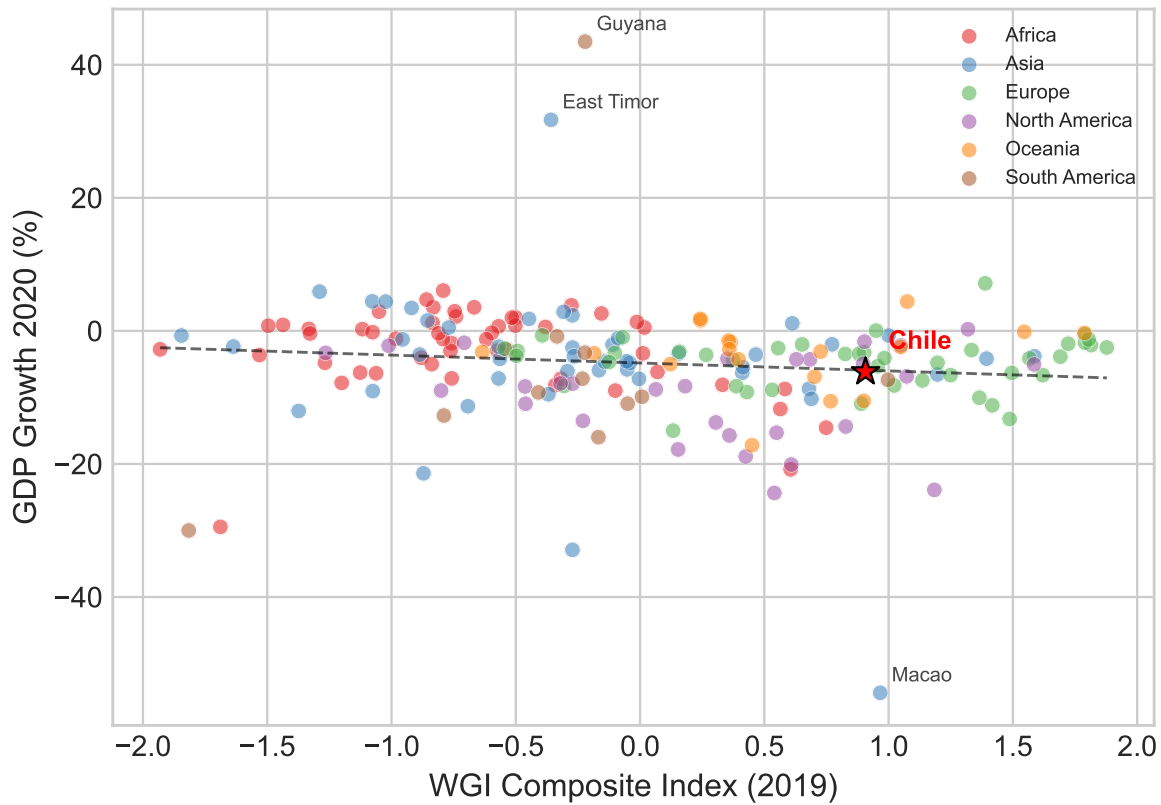


Figure S4: WGI Composite Index vs. GDP Growth 2020

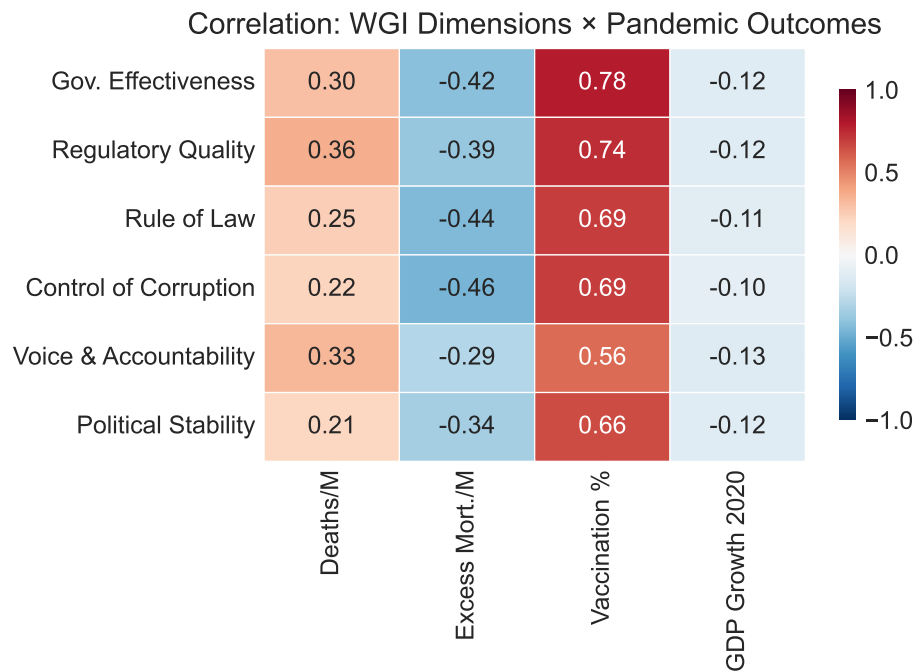


Figure S5: Correlation Heatmap: Individual WGI Dimensions and Pandemic Outcomes

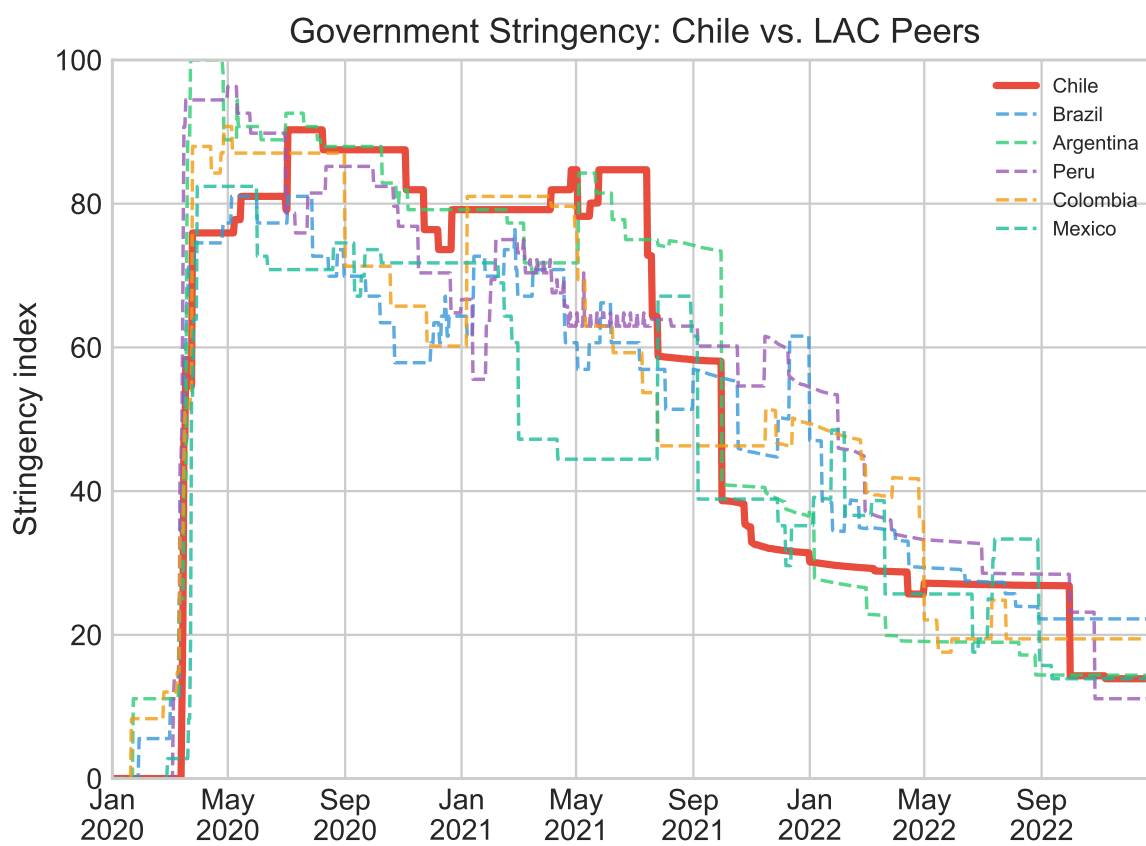


Figure S6: Government Stringency Index: Chile vs. Latin American Peers

Supplementary Tables

Supplementary Table S1 reports attrition diagnostics for the full-specification samples. Supplementary Table S2 re-estimates the reported-deaths specification ladder on the common full-model sample, and Supplementary Table S3 does the same for the excess-mortality ladder. Additional tables report WGI principal-component robustness, multicollinearity diagnostics, democracy-control robustness, timing sensitivity, influence diagnostics, and the Chile peer comparison moved out of the main text.

Table S1: Attrition Diagnostics for Full-Specification Samples

	Deaths incl.	Deaths excl.	Excess incl.	Excess excl.
Countries	111	125	76	160
WGI composite	0.137	-0.036	0.479	-0.181
Log GDP per capita	9.844	9.362	10.335	9.194
Population 65+ (%)	10.436	8.310	13.160	7.357
Hospital beds/1000	2.978	3.024	3.741	2.376
Physicians/1000	2.307	1.953	3.046	1.211

Notes: Included countries have non-missing data for the full specification of the relevant model. Excluded countries are countries in the merged country universe not included in that complete-case specification. Means are calculated using available non-missing values, so the table describes complete-case attrition from the merged dataset rather than from a single fixed WGI-only denominator.

Table S2: Common-Sample Robustness: COVID-19 Deaths per Million

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Dep. var.: COVID-19 deaths per million</i>						
WGI composite	340.030*** (102.133)	-615.194*** (167.061)	-605.345*** (166.986)	-516.160*** (168.907)	-540.630*** (167.172)	-384.405** (177.692)
Constant	1105.172*** (111.489)	-1619.133* (915.807)	-1091.266 (1206.185)	-1534.173 (1144.240)	-1736.363 (1168.014)	-598.391 (1395.917)
Log GDP per capita		78.677 (127.640)	25.754 (151.523)	-24.336 (155.043)	7.046 (152.656)	-6.950 (166.290)
Population 65+ (%)		143.258*** (20.792)	130.012*** (29.879)	132.957*** (30.623)	130.500*** (30.975)	105.330*** (37.424)
Pop. density		-0.131** (0.060)	-0.111 (0.068)	-0.102 (0.067)	-0.102 (0.065)	-0.027 (0.054)
Urbanization (%)		9.765 (6.718)	8.327 (7.838)	5.556 (7.232)	5.782 (7.453)	-1.440 (5.682)
Health exp. (% GDP)			-3.279 (39.687)	1.309 (36.608)	0.381 (37.418)	-53.360 (44.744)
Hospital beds/1000			-32.264 (61.081)	-8.845 (61.955)	-13.207 (62.734)	38.702 (63.376)
Physicians/1000			144.474 (125.481)	127.298 (121.683)	129.972 (121.073)	126.953 (151.609)
Stringency index				19.288* (10.575)	19.252* (10.621)	9.803 (8.484)
Diabetes prev. (%)					-8.022 (17.724)	18.197 (16.174)
N	111	111	111	111	111	111
R^2	0.062	0.427	0.437	0.457	0.458	0.603
Adj. R^2	0.054	0.400	0.393	0.409	0.404	0.541
Continent FE	No	No	No	No	No	Yes

Notes: All columns are estimated on the common sample defined by non-missingness in the full specification for the stated outcome. This isolates coefficient changes from changes in country composition across the ladder. Robust (HC1) standard errors in parentheses. *** $p < 0.01$,

** $p < 0.05$, * $p < 0.10$.

Table S3: Common-Sample Robustness: Excess Mortality per Million

	(1)	(2)	(3)	(4)	(5)	(6)
<i>Dep. var.: Excess mortality per million</i>						
WGI composite	-1064.514*** (205.846)	-2331.817*** (332.754)	-2240.983*** (332.715)	-2111.453*** (362.074)	-2229.856*** (371.357)	-1859.993*** (375.100)
Constant	2841.597*** (255.585)	-2194.249 (3525.325)	-944.315 (3787.203)	-2074.442 (3550.968)	-2802.840 (3615.757)	-476.689 (4026.066)
Log GDP per capita		248.333 (387.385)	124.052 (417.587)	95.342 (407.449)	254.562 (423.417)	39.083 (480.719)
Population 65+ (%)		228.966*** (36.607)	222.664*** (53.757)	234.130*** (56.169)	217.625*** (58.204)	155.998** (69.575)
Pop. density		-0.008 (0.113)	-0.018 (0.122)	-0.009 (0.115)	-0.020 (0.112)	0.093 (0.106)
Urbanization (%)		0.918 (10.970)	2.231 (13.510)	-1.051 (12.496)	0.529 (12.988)	-4.168 (12.555)
Health exp. (% GDP)			-76.857 (109.032)	-92.980 (109.236)	-97.412 (114.241)	-180.979 (133.744)
Hospital beds/1000			-37.776 (92.016)	-2.616 (96.698)	-24.698 (93.100)	57.234 (94.917)
Physicians/1000			224.619 (211.941)	209.051 (205.475)	197.931 (205.669)	274.778 (246.659)
Stringency index				28.126 (17.982)	25.739 (18.960)	25.036 (20.216)
Diabetes prev. (%)					-48.484 (34.401)	-4.014 (38.905)
N	76	76	76	76	76	76
R^2	0.205	0.559	0.573	0.586	0.594	0.655
Adj. R^2	0.195	0.527	0.522	0.529	0.532	0.568
Continent FE	No	No	No	No	No	Yes

Notes: All columns are estimated on the common sample defined by non-missingness in the full specification for the stated outcome. This isolates coefficient changes from changes in country composition across the ladder. Robust (HC1) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table S4: WGI Composite Robustness: Simple Average and First Principal Component

	Deaths: avg.	Deaths: PC1	Excess: avg.	Excess: PC1	Vaccination: avg.	Vaccination: PC1
<i>Dep. var.: Deaths, excess mortality, or vaccination</i>						
WGI composite	-384.405** (177.692)		-1859.993*** (375.100)		15.537*** (3.013)	
Constant	-598.391 (1395.917)	-622.747 (1401.620)	-476.689 (4026.066)	-552.745 (4044.615)	-67.634*** (24.825)	-67.172*** (24.968)
WGI first PC		-356.291** (164.461)		-1714.660*** (348.017)		14.307*** (2.791)
N	111	111	76	76	108	108
R^2	0.603	0.603	0.655	0.654	0.776	0.776
Adj. R^2	0.541	0.541	0.568	0.567	0.740	0.739
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Average-index columns use the simple WGI composite from the main analysis. PC1 columns replace it with the first principal-component score from the six standardized WGI dimensions, normalized to mean zero and standard deviation one. All specifications include the full set of controls and continent fixed effects. Robust (HC1) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table S5: Variance Inflation Diagnostics for Core Full Specification

Variable	VIF
WGI composite	3.83
Log GDP per capita	6.20
Population 65+ (%)	4.73
Population density	1.14
Urbanization (%)	2.60
Health expenditure (% GDP)	2.02
Hospital beds/1000	2.21
Physicians/1000	3.87
Stringency index	1.28
Diabetes prevalence (%)	1.58

Notes: VIFs are computed on the complete-case sample for the reported-deaths full specification before adding continent fixed effects (N = 111). The diagnostic addresses collinearity among the main substantive covariates, especially WGI and log GDP per capita.

Table S6: Robustness to Electoral Democracy Controls

	Deaths: base	Deaths: +dem.	Excess: base	Excess: +dem.	Vaccination: base	Vaccination: +dem.
<i>Dep. var.: Deaths, excess mortality, or vaccination</i>						
WGI composite	-384.405** (177.692)	-600.720*** (206.941)	-1859.993*** (375.100)	-1364.503*** (440.207)	15.537*** (3.013)	19.767*** (3.678)
Constant	-598.391 (1395.917)	-2010.257 (1758.224)	-476.689 (4026.066)	2459.975 (4226.931)	-67.634*** (24.825)	-39.883 (28.352)
Electoral democracy index		999.083 (644.927)		-1846.975 (1442.871)		-19.262* (11.020)
N	111	111	76	76	108	108
R^2	0.603	0.613	0.655	0.663	0.776	0.786
Adj. R^2	0.541	0.547	0.568	0.572	0.740	0.748
Continent FE	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Democracy-control columns add V-Dem’s 2019 electoral democracy index, obtained through Our World in Data, to the full specification. The index ranges from 0 to 1, with higher values indicating more electoral democracy. All columns include the full controls and continent fixed effects. Robust (HC1) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table S7: Timing Sensitivity: Institutional Quality, Mortality, and Vaccination

	Deaths to Sep.	Q4 deaths	Deaths end-2021	Vacc. Sep.	Vacc. end-2021
<i>Dep. var.: Timing-specific mortality or vaccination outcome</i>					
WGI composite	-281.372* (144.880)	-103.033** (46.852)	-384.405** (177.692)	14.149*** (3.070)	15.537*** (3.013)
Constant	-972.893 (1122.360)	374.502 (403.336)	-598.391 (1395.917)	-70.583*** (24.993)	-67.634*** (24.825)
N	111	111	111	107	108
R^2	0.600	0.555	0.603	0.739	0.776
Adj. R^2	0.537	0.485	0.541	0.696	0.740
Continent FE	Yes	Yes	Yes	Yes	Yes

Notes: Columns estimate the full specification using outcomes measured before the final quarter of 2021, during the fourth quarter of 2021, and at end-2021. This does not create a panel estimator; it checks whether the main cross-sectional association is sensitive to the outcome window. Robust (HC1) standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table S8: Influence Diagnostics for Main Full-Specification Models

Outcome	N	Baseline WGI	Max Cook’s D	Max Cook’s D country	Cook’s D > 4/N	High leverage	LOO min	LOO max
Reported deaths	111	-384.405	0.338	Georgia	8	8	-450.125 (Belarus)	-289.407 (Bosnia and Herzegovina)
Excess mortality	76	-1859.993	3.717	Singapore	10	7	-1998.929 (Belarus)	-1649.861 (United States)
Vaccination	108	15.537	1.424	Singapore	7	8	14.377 (Gabon)	16.558 (Cambodia)

Notes: LOO denotes leave-one-out estimates of the WGI coefficient. High leverage counts observations with leverage greater than $2k/N$, where k is the number of estimated parameters including the constant. The max Cook’s D country identifies the observation with the largest Cook’s distance for each model. The diagnostics are descriptive and are used to check whether a single country drives the main associations.

Table S9: Chile and Latin American Peers: Key Indicators

Country	WGI	Gov. Eff.	Deaths/M	Excess/M	Vacc. (%)	GDP '20	GDP '21	String.
Chile	0.91	1.05	1999	2000	84.6	-6.1	11.3	65.2
Brazil	-0.22	0.04	2942	3110	68.2	-3.3	4.8	57.5
Argentina	0.01	0.26	2603	2888	67.8	-9.9	10.4	71.4
Peru	-0.05	0.05	6052	5477	66.0	-10.9	13.4	67.4
Colombia	-0.23	-0.07	2510	3182	54.7	-7.2	10.8	63.2
Mexico	-0.46	-0.01	2362	5100	56.6	-8.4	6.0	57.4
South America mean	-0.10	0.04	2029	2998	57.2	-5.8	8.2	61.8

Notes: WGI = Worldwide Governance Indicators composite (2019). Deaths and excess mortality per million as of Dec 31, 2021. Vaccination = % fully vaccinated by end-2021. GDP growth in %. Stringency = mean OxCGRT Stringency Index during 2020. South America mean includes all South American countries in the sample.