APPENDIX 3

# Data Sources Used in Statistical Analyses

ALL DATA FILES (along with Stata do-files, output files, and robustness test files) used in statistical analyses are available from the author. In addition to the original data on revolutionary episodes collected by the author and described in Appendix 1, the following sources were used:

*1 Social and demographic data*

**Education: average total years schooling**: Barro and Lee 2013. For population aged fifteen or over.

**Ethnic and religious fractionalization**: Fearon 2003 and Wimmer and Min 2006. Data for Belize, Brunei, Equatorial Guinea, Iceland, Qatar, and Suriname come from Alesina et al. 2003.

**Internet usage by country**: World Bank (at http://data.worldbank.org/indicator/IT.NET.USER.P2).

**Literacy: percent literate**: Vanhanen 2000; Banks and Wilson 2015; CIA (at https://www.cia.gov/library/publications/the-world-factbook/fields/print_2103.html); UNESCO (at http://data.uis.unesco.org/index.aspx?queryid=166).

**Media: newspaper circulation, televisions, and radios per hundred thousand population**: Banks and Wilson 2015.

**Mobile phone usage by country**: International Telecommunications Union (at http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx).

**Mortality: infant mortality**: Gapminder (https://www.gapminder.org/documentation/documentation/gapdoc002.pdf ) and Clio-Infra (https://clio-infra.eu/Indicators/InfantMortality.html).

**Mortality: under-five child mortality**: Gapminder (at http://www.gapminder.org/data/documentation/gd005/). Under-five child



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mortality is defined as the probability (expressed as a rate per thousand live births) that a child born in a specific year will die before reaching the age of five if subject to current age-specific mortality rates.

**Population**: Wimmer and Min 2006, supplemented by the Population Statistics website (http://www.populstat.info/) and Gapminder (https://www.gapminder.org/). Some data points were interpolated to fill in missing values, with clear outlier estimations dropped.

**Population: proportion below age fifteen**: EarthTrends (http://earthtrends.wri.org).

**Population: proportion between ages fifteen and twenty-four**: United Nations Population Division (https://esa.un.org/unpd/wpp/dataquery/).

**Population: proportion between ages twenty and thirty-nine**: United Nations Population Division, accessed at Gapminder (https://www.gapminder.org/).

**Religion: percent Muslim**: Kettani 2010a; 2010b; 2010c; 2010d; 2010e. Interpolated for the 1950–2014 years, with 1950 values used for years prior to 1950.

**Territory: proportion covered by rough terrain**: Fearon and Laitin 2003.

**Territory: size of territory**: World Bank (http://data.worldbank.org/).

**Urbanization**: World Bank World Development Indicators (http://databank.worldbank.org/data/reports.aspx?source=world-development-indicators) for the years 1960–2014, supplemented by United Nations 2006; Vanhanen 2000; Banks and Wilson 2015; and EUGene (Bennett and Stam 2000).

### 2 *Political data*

**Battle deaths: from external war**: Correlates of War (COW) (Sarkees and Wayman 2010) through 2007, supplemented by Wikipedia and PRIO (Lacina and Gleditsch 2005). External war is defined as including wars classified by COW as inter-state wars, as well as those classified by COW as extra-state wars (for states engaged in warfare beyond their borders). Battle deaths were averaged and evenly distributed over the course of the years of a war. For a state to be considered a war participant, it had either to commit at least one thousand troops or to suffer at least one hundred battle-related deaths.

**Battle deaths: global**: Data for 1900–1988 come from Lacina, Gleditsch, and Russett 2006. For 1989–2014, UCDP Battle Deaths Dataset v.5–2015, 1989–2014 (Pettersson and Wallensteen 2015).

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**Boix-Miller-Rosato dichotomous measure of democracy**: Boix, Miller, and Rosato 2013.
**Civil society index (V-Dem)**: Coppedge et al. 2016.
**Conscription practice**: Asal, Conrad, and Toronto 2017.
**Electoral democracy index (V-Dem)**: Coppedge et al. 2016.
**Executive bribery and corruption (V-Dem)**: Coppedge et al. 2016.
**Executive corruption index (V-Dem)**: Coppedge et al. 2016.
**Free and fair elections (V-Dem)**: Coppedge et al. 2016
**Government accountability index (V-Dem)**: Coppedge et al. 2016.
**Human rights treaty ratifications**: Nielsen and Simmons 2015; United Nations Treaty Collection (at https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-9&chapter=4&lang=en). Measured as the number of ratifications of four key human rights treaties by state (ranging from 0 to 4). The four treaties were the International Covenant on Civil and Political Rights (ICCPR), the Optional Protocol of the ICCPR, the Convention Against Torture, and Article 22 on the authority of the International Covenant on Civil and Political Rights of the Committee Against Torture.
**Incumbent leaders: number of years in power and ages**: Calculated from "Archigos: A Data Base on Leaders 1875–2014" (Goemans, Gleditsch, and Chiozza 2009), supplemented by information from Rulers (https://www.rulers.org/). In years of revolutionary episodes or coups, the data refer to the leader in power prior to the onset of the episode.
**Liberal democracy index (V-Dem)**: Coppedge et al. 2016.
**Media censorship (V-Dem)**: Coppedge et al. 2016.
**Military coups**: For 1950–2014 (Powell and Thyne 2011); for 1946–49 (Marshall and Marshall 2015 and other sources).
**Military personnel (number)**: EUGene (Bennett and Stam 2000) and World Bank (http://data.worldbank.org/indicator/MS.MIL.TOTL.P1).
**Military spending**: EUGene (Bennett and Stam 2000) and Stockholm International Peace Research Institute (SIPRI), at https://www.sipri.org/databases/milex.
**Non-democratic regimes: types**: Geddes, Wright, and Frantz 2014.
**Political civil liberties index (V-Dem)**: Coppedge et al. 2016.
**Political constraints**: Henisz 2002. The measure is based on the number of independent branches of government with veto power over policy change, adjusted to take into account the extent of alignment across branches of government using data on the party composition of the executive and legislative branches.

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**Political killing index (V-Dem)**: Pemstein et al. 2018; Coppedge et al. 2018. I reversed the measure so that it ran from 0 (non-existent) to 4 (systematic).

**Polity scores**: Polity IV Project, Political Regime Characteristics and Transitions, 1800–2014, available at http://www.systemicpeace.org/inscrdata.html. Polity scores were revised in line with the advice contained in Plümper and Neumayer 2010. Interregnum scores were coded as missing and then interpolated relative to the endpoints of known scores.

**Private civil liberties index (V-Dem)**: Coppedge et al. 2016.

**Rule of law index (V-Dem)**: Coppedge et al. 2016.

**State capacity index**: Hanson and Sigman 2013 (obtained from authors on request).

**Territory under state authority (percent) (V-Dem)**: Coppedge et al. 2016.

3 *Economic data*

**Diamond production**: Levinson, Gurney, and Kirkley 1992, supplemented by the *USGS Minerals Yearbook* (http://minerals.usgs.gov/minerals/pubs/commodity/diamond/index.html#myb). The data were transformed into a dummy variable differentiating major diamond producers from those that were not.

**Dollar exchange rates**: Clio infra (https://clio-infra.eu/Indicators/ExchangeRatestoUSDollar.html).

**Electric power consumption** (kWh per capita: World Bank (http://data.worldbank.org/indicator/EG.USE.ELEC.KH.PC).

**Financial crises**: Reinhart and Rogoff 2009 (http://www.carmenreinhart.com/data/browse-by-topic/topics/7/).

**GDP per capita (in 1990 international dollars)**: Angus Maddison, "Historical Statistics of the World Economy: 1–2008 AD" (available at http://www.ggdc.net/maddison/oriindex.htm) through 2008, revised and supplemented by the Maddison Project (Bolt and van Zanden 2014); Barro and Ursúa 2008; the Penn World Tables 6.3 (Heston, Summers, and Aten 2009); Wimmer and Min 2006 for some early data points; and estimations using indexed growth rates from the World Bank (http://data.worldbank.org/indicator/NY.GDP.PCAP.KD) for data after 2010. Data points for Cyprus and Iceland were calculated in part from data on GDP in 1990 international dollars from the Knoema search engine (http://knoema.com/).

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**Global economic growth**: Calculated from annual global population data from the US Census Bureau (https://www.census.gov/population/international/data/idb/informationGateway.php) and world GDP PPP (Gapminder, at http://www.gapminder.org/data/documentation/gd001/). GDP PPP is measured in billions of 2005 international dollars.

**Government debt: ratio to GDP**: Clio infra (https://www.clio-infra.eu/Indicators/TotalGrossCentralGovernmentDebtasaPercentageofGDP.html#) and IMF, at http://www.imf.org/external/datamapper/DEBT1@DEBT/OEMDC/ADVEC/WEOWORLD.

**Inflation rates**: Clio Infra (at https://www.clio-infra.eu/Indicators/Inflation.html); the World Bank (http://data.worldbank.org/indicator/FP.CPI.TOTL.ZG); and Mitchell 2007a; 2007b; 2007c. Annual rates were winsorized at the top 2 and bottom 2 percent (i.e., plus 300 and minus 11 respectively) in order to avoid the undue effect of hyperinflation and hyper-deflation on the estimations.

**Investment relative to GDP**: Penn World Tables (Feenstra, Inklaar, and Timmer 2015). Data available since 1946.

**Nominal trade as percentage of nominal GDP**: CEPII's TRADHIST dataset, located at http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=32 and referenced in Fouquin and Hugot 2016.

**Oil production**: Wimmer and Min 2006; the World Bank (http://data.worldbank.org/); Ross and Mahdavi 2015; and "Historical Energy Production Statistics" produced by The Shift Project (at http://www.tsp-data-portal.org/Energy-Production-Statistics#tspQvChart). All production statistics were converted into metric tons per year. East German data were interpolated from the National Petroleum Council 1964, 11 and UN statistics (at https://knoema.com/UNSDESD2016/un-statistics-division-energy-statistics-database-1990-2013?tsId=1224700).

**Property rights index (V-Dem)**: Coppedge et al. 2016.

**State ownership of the economy (V-Dem)**: Coppedge et al. 2016.

*4 Data on inequality*

**Educational equality index (V-Dem)**: Sigman and Lindberg 2015; Coppedge et al. 2018

**Equal distribution of resources index (V-Dem)**: Coppedge et al. 2016; Sigman and Lindberg 2015.

**Ethnic groups: (percentage of population consisting of) Discriminated ethnic groups; Ethnic groups excluded from central power;**

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**Ethnic groups with local power only; Powerless ethnic groups** (Ethnic Power Relations Dataset): Wimmer, Cederman, and Min 2009.

**Family farms**: Vanhanen 2003.

**Gini index (income):** UNU-WIDER 2017; Coppedge et al. 2018 (missing data interpolated to 2012).

**Health equality index (V-Dem)**: Sigman and Lindberg 2015; Coppedge et al. 2018

**Land Ginis**: Compiled from FAO 1955; FAO 1971; FAO 1981; FAOSTAT (data at http://www.fao.org/economic/the-statistics-division-ess/world-census-of-agriculture/additional-international-comparison-tables-including-gini-coefficients/table-2-number-and-area-of-holdings-and-ginis-index-of-concentration-1990-1980-and-1870-rounds-of-agricultural-censuses1/en/ and at http://www.fao.org/economic/the-statistics-division-ess/world-census-of-agriculture/additional-international-comparison-tables-including-gini-coefficients/table-1-number-and-area-of-holdings-and-ginis-index-of-concentration-1990-round-of-agricultural-censuses/en/); Frankema 2010; Deininger and Olinto 1999, 24; Lipton 2009, 286–87; Moyo 2014; Tai 1974, 310; Nafziger and Lindert 2013, 16; Pryor 1992; Russett 1964; Tillack and Schulze 2012, 466; Lambini et al 2014; Deininger, Nizalov, and Singh 2013; IFAD 2001; Lowder, Skoet, and Singh 2014. Land Ginis for more recent years were calculated using data from Eurostat (http://ec.europa.eu/eurostat/statistics-explained/images/3/3a/Utilised_agriculture_area,_by_size_of_the_holding_(UAA)_(hectares)_AgriPB13.png) and country-specific statistical websites using the POVCAL tool for computing Gini indices from grouped data, available from the World Bank. For socialist countries, the data exclude periods of predominantly collectivized agriculture. Data were interpolated between measurement points.

**Land reform**: Albertus 2015 (http://www.michaelalbertus.com/research.html).

**Women's civil liberties index (V-Dem)**: Sundström et al. 2015; Coppedge et al. 2018.

**Women's civil society participation index (V-Dem)**: Sundström et al. 2015; Coppedge et al. 2018.

**Women's political empowerment index (V-Dem)**: Sundström et al. 2015; Coppedge et al. 2018.

**Women's political participation index (V-Dem)**: Sundström et al. 2015; Coppedge et al. 2018.

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TABLE A3.1. Cross-sectional data, means and distributions

| Variable description | N | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| Ln (population), t–1 | 299 | 9.14 | 1.6 | 4.49 | 13.91 |
| GDP per cap. ($ thousands), t–1 | 267 | 2.65 | 2.55 | 0.28 | 12.53 |
| Polity score, t–1 | 272 | –1.49 | 5.89 | –10.00 | 10.00 |
| Democracy (Boix et al.), t–1 | 209 | 0.16 | 0.37 | 0 | 1 |
| Major diamond producer (0-1), t–1 | 345 | 0.08 | 0.27 | 0.00 | 1.00 |
| Percent under age 15, t–1 | 157 | 38.60 | 9.73 | 14.85 | 57.51 |
| Percent population aged 20–39 | 175 | 29.13 | 3.39 | 22.56 | 42.68 |
| Years incumbent leader in power, t–1 | 341 | 7.14 | 8.67 | 0.00 | 42.00 |
| Incumbent age, t | 339 | 55.94 | 11.56 | 5.00 | 85.00 |
| Ln (oil production + 1), t–1 | 289 | 3.19 | 4.24 | 0.00 | 12.88 |
| Percent urban, t–1 | 246 | 23.35 | 20.59 | 0.00 | 97.57 |
| Under-5 child mortality rate, t–1 | 285 | 201.20 | 143.02 | 6.60 | 503.06 |
| Ethno-linguistic fractionalization | 143 | 0.45 | 0.30 | 0.00 | 0.90 |
| Number military personnel, t–1 | 272 | 515.85 | 1,215.82 | 0.00 | 9,050.00 |
| Military expenditure per soldier, t–1 | 182 | 6,447.51 | 9,750.39 | 10.10 | 53,719.01 |
| Use of military conscription (0–1) | 158 | 0.63 | 0.49 | 0.00 | 1.00 |
| Proportion territory covered by mountains | 303 | 18.93 | 20.05 | 0.00 | 81.00 |
| Percent family farms | 175 | 32.08 | 21.34 | 0.00 | 84.00 |
| Average total years of schooling, t–1 | 129 | 4.19 | 2.87 | 0.35 | 11.71 |
| Percent literate, t–1 | 210 | 54.52 | 31.80 | 1.00 | 100.00 |
| Geddes regime class: personal autocracy | 139 | 0.28 | 0.45 | 0.00 | 1.00 |
| Geddes regime class: party autocracy | 139 | 0.25 | 0.44 | 0.00 | 1.00 |
| Geddes regime class: military autocracy | 139 | 0.14 | 0.35 | 0.00 | 1.00 |
| Geddes regime class: monarchical autocracy | 139 | 0.07 | 0.26 | 0.00 | 1.00 |
| Electoral democracy index (V-Dem), t–1 | 249 | 0.26 | 0.19 | 0.01 | 0.89 |
| Liberal democracy index (V-Dem), t–1 | 249 | 0.17 | 0.14 | 0.01 | 0.83 |
| Core civil society index (V-Dem), t–1 | 252 | 0.40 | 0.25 | 0.02 | 0.94 |
| V-Dem executive corruption index | 261 | 0.60 | 0.27 | 0.02 | 0.97 |
| V-dem executive bribery (0–4), t–1 | 254 | 2.57 | 1.17 | 0.00 | 4.00 |
| Private ownership of economy (0–4) (V-Dem), t–1 | 252 | 2.34 | 0.87 | 0.04 | 3.77 |
| Equal distribution of resources index (V-Dem), t–1 | 252 | 0.34 | 0.25 | 0.02 | 0.96 |
| Property rights (V-Dem), t–1 | 252 | 0.48 | 0.26 | 0.01 | 0.91 |
| V-Dem media censorship, t–1 | 250 | 1.12 | 1.23 | 0 | 4 |
| State capacity index | 121 | –0.52 | 0.81 | –2.74 | 1.44 |

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TABLE A3.1. (*continued*)

| Variable description | N | Mean | SD | Min | Max |
|---|---|---|---|---|---|
| Electricity consumption per capita, t–1 | 114 | 1,545.03 | 2,886.98 | 11.52 | 21,665.44 |
| Trade as percentage of GDP, t–1 | 155 | 24.36 | 102.97 | 0.15 | 1,081.99 |
| Percent ethnically discriminated population (EPR), t–1 | 143 | 0.08 | 0.18 | 0.00 | 0.85 |
| Percent ethnically powerless population (EPR), t–1 | 143 | 0.09 | 0.17 | 0.00 | 0.85 |
| Percent ethnically excluded population (EPR), t–1 | 143 | 0.20 | 0.22 | 0.00 | 0.90 |
| Size of largest excluded group (EPR), t–1 | 143 | 0.14 | 0.17 | 0.00 | 0.85 |
| Newspaper circulation per 10,000 population, t–1 | 109 | 680.96 | 1,063.61 | 1.00 | 5,930.00 |
| Radios per 10,000 population, t–1 | 111 | 2,160.21 | 6,539.22 | 0.00 | 68,406.00 |
| Televisions per 100,000 population, t–1 | 112 | 7,142.82 | 12,579.08 | 0.00 | 75,603.00 |
| Mobile phones per 100,000 population, t–1 | 54 | 13,820.35 | 25,502.90 | 0.00 | 104,000.00 |
| Internet users (percent), t–1 | 59 | 13.80 | 17.38 | 0.00 | 77.00 |

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