The State Capacity Dataset

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Version 1

Online Appendix A   State Capacity Indicators

Table A.1 shows coverage and descriptive statistics for all capacity indicators and indices that the authors considered including in the latent variable model. The selection criteria are described below. Following these criteria, the model ultimately includes 21 indicators marked with an X in the "Select" column of the table. The coverage and descriptive statistics displayed in Table A.1 cover only the time period of interest in this study: 1960-2015. Some of the measures extend back further in time. The number of countries reflects the total number of countries covered during the time period but does not imply that the same number of countries is covered across all years.

A.1   Selection Criteria

Our main objective is to create a measure of state capacity with broad coverage to support cross-national comparative research, especially large-sample research. Our time period of interest begins in 1960, as this is a point at which data on a wide range of indicators starts to become available. In selecting from among these indicators, we apply the following criteria:

1. *Conceptual fit.* We seek indicators that are conceptually linked to the three core dimensions of state capacity identified in this project: extractive capacity, coercive capacity, and administrative capacity. While some indicators are more closely related to one dimension than another, it is often the case that indicators will represent capacity in multiple dimensions.

   We seek to avoid indicators that are connected with concepts that may be correlated with state capacity but capture other political features of states, such as regime characteristics. For example, we do not use indicators related to "functioning of government," which incorporate components related to elections for policymakers and democratic accountability. Likewise, we do not include measures that focus on corruption, as they are a potential outcome of Weberian bureaucratic organization but do not directly indicate administrative capabilities.

2. *Coverage.* Our objective is to provide an annual measure of state capacity for every state recognized in the Polity dataset from 1960-2015. This is 177 different states and a total of

8,254 country-years. Geographical and temporal coverage requirements are both extensive.

Although the Bayesian latent variables model is robust to missing values, the procedure nevertheless benefits from broader indicator coverage across countries and over time. The model treats the relationship between Capacity and an observed indicator as the same across states and over time, and we get more information about these relationships from indicators that have broader temporal and cross-sectional coverage. Likewise, better information about the level of Capacity in any single country-year comes from having several observed indicators for that country-year.

Since cross-national data are more extensive in later decades, we selected some indicators with more limited coverage to flesh out the earlier years. For example, indicators related to administrative capacity are more plentiful in later years: the PRS bureaucratic quality indicator becomes available in 1984 and the World Bank CPIA assessment of quality of public administration becomes available in 2005. For this reason, we include the administrative efficiency measure from Adelman and Morris, which covers 1960-1962, and the Weberianness measure from Rauch and Evans, which covers 1970-1990, despite their time-limited coverage.

By contrast, we did not include the state legibility measure of Lee and Zhang (2017) despite its conceptual fit with our approach. The 345 data points this measure provides are more scattered throughout the 1960-2015 time period, with 70 data points coming prior to 1975 when indicators are most sparse. In terms of the 112 countries covered by the measure, 31 countries are measured once and 23 are measured twice. In our judgement, the unique construction of this measure gives it high value as a validity check on our estimates, outweighing the contribution it would make as a constituent indicator.

3. *Mix of objective and subjective measures.* Since both types of indicators have weaknesses, we believe that using a mixture is better than relying too heavily on any one type.

   By objective measures, we mean those that are based on data, such as tax collections infor-

mation or military spending. In general, these measures can be problematic to the extent that they measure political preferences, such as political decisions concerning tax rates, or circumstances, such as a period of engagement in international conflict.

Subjective measures, by contrast, are those based upon an expert assessment. These measures are subject to bias based on observed outcomes, such as when an expert's impression of bureaucratic quality is affected by knowledge of that country's rate of economic growth or its historical development. Alternatively, these measures are subject to inaccuracy due to the fact that they are based on contemporary impressions of distant points in time.

4. *Avoidance of broad aggregate measures.* We steer away from indexes constructed from a broad range of indicators, such as the Worldwide Governance Indicators, the Fragile States Index, or the state capacity estimates of Hendrix (2010). First, these measures include some of the same component indicators that we include, and we seek to avoid duplication. Second, these measures sometimes include indicators that capture other concepts, such as regime characteristics, or measure outcomes too closely.

We do include, however, indexes that are derived from a set of source indicators focused on a particular facet of state capacity. For example, the information capacity measure from Brambor et al. (2020), and the World Bank's Statistical Capacity Index are built from assessments of the availability or quality of particular types of information that states typically gather.

Table A.1: Indicator List

Indicator	Select	Years	Countries	mean	sd	min	max	N
Administrative Efficiency	x	1960–1962	69	3.53	2.19	0.00	8.00	199
Anocracy		1960–2015	177	6.35	2.34	0.00	9.00	8254
Basic Administration (BTI)		2006–2015	129	6.62	2.19	1.00	10.00	1247
Bureaucratic Quality (PRS)	x	1984–2015	141	2.09	1.17	0.00	4.00	4089
Census Frequency	x	1960–2015	173	0.91	0.41	0.12	2.39	8201
Control of Corruption (WGI)		1996–2015	166	-0.15	1.00	-1.87	2.47	2784
Corruption (PRS)		1984–2015	141	2.91	1.31	0.00	6.00	4089
Corruption Perceptions Index (TI)		1995–2014	166	41.91	21.68	4.00	100.00	2459
CPIA Index (World Bank)		2005–2015	72	3.29	0.48	1.40	4.44	724
Eff. of Rev. Mobilization (CPIA)	x	2005–2015	72	1.83	0.98	0.00	4.00	724
Fiscal Capacity (V-Dem)	x	1960–2015	174	0.51	1.17	-3.50	2.59	7673
Fragile States Ind. (Rice & Patrick)		2005–2015	165	72.46	23.34	16.80	114.90	1719
Functioning of Government (EIU)		2006–2015	162	4.90	2.46	0.00	10.00	1296
Functioning of Government (FH)		2005–2015	166	6.00	3.66	0.00	12.00	1642
Good Government (Knack & Keefer)		2002–2002	157	-0.11	0.65	-2.11	1.01	157
Government Effectiveness (WGI)		1996–2015	166	-0.12	0.99	-2.45	2.44	2782
Imp. Public Adm. (Rothstein & Teorell)		2002–2002	50	-0.10	0.75	-1.30	1.28	50
Information Capac. (Brambor et al.)	x	1960–2015	70	0.62	0.15	0.00	1.00	3591
Law and Order (PRS)	x	1984–2015	141	3.60	1.44	0.00	6.00	4089
Management Index (BTI)		2003–2015	129	4.80	1.54	0.96	7.92	1588
(log) Mil. Spend per 1,000 pop.	x	1960–2015	176	3.50	1.80	0.00	8.76	7925
(log) Mil Personnel per 1 million pop.	x	1960–2015	176	1.69	0.83	0.00	4.58	8116
Monopoly on Use of Force (BTI)	x	2006–2015	129	12.86	4.32	0.00	18.00	1247
(log) Myers Index (Lee & Zhang)		1960–2012	112	1.39	1.29	-1.75	3.81	345
(log) Paramil. Pers. per 1,000 pop.		1960–2015	172	1.09	0.93	0.00	5.51	5633
(log) Police Officers per 1,000 pop.	x	1973–2015	121	1.29	0.43	0.03	3.36	1569
Public Sector Mgmt. (CPIA)		2005–2015	72	3.02	0.46	1.60	4.10	724
Public Services (FSI)		2005–2015	165	5.92	2.37	1.00	10.00	1719
Qual. of Budg. & Fin. Mgmt. (CPIA)	x	2005–2015	72	3.45	1.21	0.00	6.00	724
Qual. of Pub. Adm. (CPIA)	x	2005–2015	72	1.84	0.98	0.00	4.00	724
Rational-Legal (Hendrix)		1984–1999	95	0.00	0.99	-1.69	1.64	1408
Regulatory Quality (WGI)		1996–2015	166	-0.11	0.99	-2.65	2.26	2783
Relative Pol. Efficiency		1960–2011	157	0.98	0.43	0.10	3.75	6747
Relative Pol. Reach		1960–2007	136	1.00	0.29	0.02	1.83	5781
Rigorous Pub. Adm. (V-Dem)	x	1960–2015	177	0.15	1.49	-3.69	4.46	8252
Rule of Law (WGI)		1996–2015	166	-0.19	0.99	-2.61	2.10	2784
State Antiquity Ind. (Bockstette et al.)	x	1960–2015	172	0.70	0.17	0.18	1.00	8032
State Auth. over Territory (V-Dem)	x	1960–2015	177	1.74	0.87	-0.42	3.72	8237
Stateness Index (BTI)		2003–2015	129	7.46	1.71	1.75	10.00	1592
Statistical Capacity (World Bank)	x	2004–2015	127	0.67	0.17	0.17	0.99	1492
Taxes on Income % Tax Revenue	x	1963–2015	168	0.34	0.16	0.00	1.00	5854
Taxes on Trade % Tax Revenue	x	1960–2015	167	0.20	0.19	-0.10	1.00	6270
Total Tax Revenue % of GDP	x	1960–2015	167	0.16	0.08	0.00	0.59	6413
Weberianness (Rauch & Evans)	x	1970–1990	34	7.04	3.14	1.00	13.50	714

A.2 Description of Selected Indicators

Administrative Efficiency (Adelman and Morris 1967)

As part of a study on the social and political sources of economic growth in developing countries, Adelman and Morris (1967) produced a measure of "degree of administrative efficiency" for 69 countries. The measure encompasses three categories of the efficiency of public administration: "the degree of permanence and training of administrators," the "extent to which corruption, inefficiency and incompetence seriously hamper government functioning," and the "extent to which instability of policy at higher levels of administration promotes inefficiency" (p. 77).

To make these assessments, Adelman and Morris interviewed regional and country experts, compiled information from country studies, and checked their findings against those of other analysts. The period of observation was 1957-1962, overlapping our period of analysis for the years 1960-1962.

The ratings reflect a letter grade system akin to those of student in school, including minuses and plusses:

- A grade of A signifies that the country has a reasonably efficient public administration with "well-trained civil services" and low levels of corruption.

- A grade of B signifies that the country has "considerable bureaucratic inefficiency but . . . a permanent body of administrators" (p. 78). Corruption and policy instability were present but did not significantly interfere with government functioning.

- A grade of C signifies "extreme bureaucratic inefficiency and/or widespread corruption and/or serious instability of policy at higher administrative levels" (p. 78).

Once accounting for plusses and minuses, this measurement strategy produces a nine-point scale (0 to 8).

5

Bureaucratic Quality (Political Risk Services)

As part of its International Country Risk Guide (ICRG), the PRS Group rates the "institutional strength and quality of the bureaucracy" in a country on a 5-point scale (0 to 4). High values represent bureaucracies that have the "strength and expertise to govern without drastic changes in policy or interruptions of government services." Among the criteria for bureaucratic quality are the degree of autonomy from political pressure and protocols for recruitment and training of staff. See Howell (2011). Coverage is 1984-2015.

Census Frequency (U.S. Census Bureau, UN)

Census frequency is inspired by Soifer (2013) and adapted from Hanson (2015). For each year, the variable is calculated as 10 divided by the number of years between censuses, with the annual values smoothed using a five-year moving average. The measure thus equals 1 if a country has a census every ten years and moves toward 0 the greater the number of years between censuses. Source data on census dates come from the International Programs Center of the U.S. Census Bureau (2008) and the United Nations Statistical Division (2013). Coverage is 1960-2015.

Efficiency of Revenue Mobilization (World Bank CPIA)

This is a five-point scale (rescaled 0 to 4) in which World Bank staff rate countries on tax systems and tax administration. Higher scores are given to higher-quality systems of taxation. Criteria include:

- the extent to which the tax laws are "stable, certain, and clear."

- the extent to which tax administration is "effective, and entirely rule-based."

- administrative and compliance costs are low, and information systems are functioning.

- the extent to which taxes come from sales/VAT taxes, property taxes, and corporate/personal income taxes applied to a broad base, rather than from taxes on international trade.

For further details, see World Bank (2017) p. 39. Coverage is 2005-2015.

Fiscal Capacity (V-Dem v9)

This is the state fiscal capacity (v2stfisccap) variable from version 9 of the Varieties of Democracy project (Coppedge et al. 2019). The measure is a Bayesian item response theory measurement model based on a five-point ordinal scale (0-4) in which higher values indicate that the state has greater capacity to fund itself through taxes that are of greater administrative complexity.

- 0: The state is not capable of raising revenue to finance itself.

- 1: The state primarily relies on external sources of funding (loans and foreign aid) to finance its activities.

- 2: The state primarily relies on directly controlling economic assets (natural resource rents, public monopolies, and the expropriation of assets within and outside the country) to finance its activities.

- 3: The state primarily relies on taxes on property (land taxes) and trade (customs duties).

- 4: The state primarily relies on taxes on economic transactions (such as sales taxes) and/or taxes on income, corporate profits and capital.

Information Capacity (Brambor et al. 2020)

The original measure was estimated using an Item Response Theory (IRT) model using the following indicators:

- when the country first established a statistical agency

- whether the country has a civil register

- whether the country has a population register

- a measure of the country's ability to conduct a regular census

7

- a measure of the country's ability to produce an annual statistical yearbook.

Coverage is 1960-2015 for 66 countries. For a small number of country-years at the end of this period, where the IRT estimates were not available, values were constructed using a parallel set of estimates from a principal components analysis (PCA) involving the same indicators. First, if the estimates from the PCA model did not change from one year to the next, IRT estimates were extended forward. Second, all remaining cases use the predicted values from regressing the IRT estimates on the PCA estimates.

Law and Order (Political Risk Services)

As part of its International Country Risk Guide (ICRG), the PRS Group rates the components of law and order in a country to create a 7-point scale (0 to 6). For law, up to three points are allocated according to the strength and impartiality of the legal system. For order, up to three points are allocated according to an assessment of popular observance of the law. See Howell (2011). Coverage is 1984-2015.

(log) Military Personnel per 1,000 in population (COW, WDI)

Data on the number of military personnel (in thousands) from 1960-2012 comes primarily from the Correlates of War Project's National Military Capabilities dataset version 5.0 (Singer et al. 1972; Singer 1987). Data on military personnel for 2013-2015 come from the World Development Indicators (World Bank). Population data are from the United Nations World Population Prospects (2019).

(log) Military Spending per capita (SIPRI, COW)

Data on military spending from the SIPRI Military Expenditure Database (2020), which cover the years 1949-2019. Missing data are filled from from the Correlates of War Project's National Military Capabilities dataset version 5.0 (Singer et al. 1972; Singer 1987). Population data are from the United Nations World Population Prospects (2019).

Monopoly on Use of Force (Bertlesmann Transformation Index)

The Bertlesmann Transformation Index is coded by country experts on a range of questions. For the monopoly on the use of force indicator, the methodology produces a 10-point scale in which: (1) indicates that the state has no monopoly on the use of force; (4) indicates the state's monopoly on force is established only in key parts of the country; (7) indicates the state's monopoly on force is established in principle but is challenged in territorial enclaves; (10) indicates there is no competition on the state's monopoly on the use of force. Experts can use ratings between these specified values. The index is published every two years beginning in 2006. For years in which the index is not published, we use the midpoint between the surrounding years.

(log) Police Officers per 1000 in population (UN)

Data on police personnel come from the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (UNODC) from various years. These are country-reported data covering the years 1973-2015 for a varying number of countries each year.

Quality of Budgetary and Financial Management (World Bank CPIA)

This is a scale, recoded to run from 0 to 6, in which World Bank staff rate countries on the following criteria:

- the extent to which there is a comprehensive and credible budget

- the extent to which budgets are formulated through extensive consultation with spending ministries and the legislature.

- the budget classification system is comprehensive and consistent with international standards.

- budgets include estimates of the budgetary impact of revenue and expenditure policy changes

- effective financial management systems that ensure implementation of the budget

9

- timely and accurate accounting, including public access to annual budget documentation

The data cover 72 countries from 2005-2015.

Quality of Public Administration (World Bank CPIA)

In this scale, recoded to run from 0 to 4, World Bank staff rate countries on the extent to which civilian central government staff are "structured to design and implement government policy and deliver services effectively." The criteria involve:

- the extent to which there are effective coordination mechanisms that ensure policy consistency across departmental boundaries.

- the extent to which organizational structures follow functional lines and avoid duplication

- the extent to which hiring and promotion are based on merit and performance

- the extent to which pay and benefit levels to not discourage people from working in the public sector.

- the sustainability of the public wage bill

The data cover 72 countries from 2005-2015.

Rigorous and Impartial Public Administration (V-Dem v9)

This is the v2clrspct variable from version 9 of the Varieties of Democracy project (Coppedge et al. 2019). The measure comes from a Bayesian item response theory measurement model using expert survey data in which the respondents rated countries based on the following category descriptions:

- 0: The law is not respected by public officials. Arbitrary or biased administration of the law is rampant.

- 1: The law is weakly respected by public officials. Arbitrary or biased administration of the law is widespread.

- 2: The law is modestly respected by public officials. Arbitrary or biased administration of the law is moderate.

- 3: The law is mostly respected by public officials. Arbitrary or biased administration of the law is limited.

- 4: The law is generally fully respected by the public officials. Arbitrary or biased administration of the law is very limited.

We use data covering 177 countries from 1960-2015.

State Antiquity Index, based on Bockstette et al. (2002)

In the original, this index codes three items for contemporary countries, based on 1950 borders, for each 50-year period starting in the year 0 C.E.:

- whether the territory of the present-day country contained a state at that period in time

- whether this state was sovereign or under the control of an outside entity

- the proportion of the contemporary territory of the country that was under the domain of this state

The original dataset stops with the year 1950. We add coverage of several countries not included in the original dataset, and we then extend the data with annual coding of the three components through 2015. We adopt the same formula for discounting past periods as the StateHist50 index.

State Authority over Territory (V-Dem v9)

For this indicator, we start with the v2svstterr measure of state authority over territory from V-Dem. This is a measure in which country experts are asked to estimate the percentage of the territory in a country over which the state has effective control. Given the highly skewed distribution of this variable, we convert the percentage to a proportion and then transform it using the inverse normal. Where a state has control of 100% of country territory, and the inverse normal is thus

undefined, we instead use the inverse normal of .9999. The resulting scale is thus similar to that of a standard normal distribution, and the effect is to widen the range of scores where the data are very concentrated at near 100% territorial control. The data cover 177 countries during the 1960-2015 time period.

Statistical Capacity (World Bank)

In the original, the World Bank's Statistical Capacity Indicator is a scale that ranges from 0 to 100. It is based on a set of 25 criteria that fall into three main categories: methodology, sources of data, and periodicity/timeliness of data:

- Methodology includes: balance of payments manual in use, CPI base year, government finance accounting, external debt reporting, import/export price indices, industrial production index, national accounts base year, accuracy of data on national immunization coverage, special dissemination standard, and UNESCO reporting.

- Sources include: agricultural census, health survey, population census, poverty survey, and vital registration system coverage.

- Periodicity/timeliness measures reporting of data on: access to water, child malnutrition, child mortality, gender equality, HIV/AIDS, immunizations, income poverty, maternal health, per capita GDP growth, and primary school completion.

We have divided the resulting measure by 100 so that 1 is the highest possible value. The data cover 127 countries from 2004 to 2015.

Taxes on Income as % of Taxes (ICTD, IMF)

For this measure, we start with the Government Revenue Dataset from the International Centre for Tax and Development (ICTD). We then expand coverage of these data considerably through a variety of sources: International Monetary Fund yearbooks, electronic archives of older IMF data, and a collection of estimates from scholars studying specific countries. Using these source data, we

calculate the percentage of total tax revenue that comes from taxes on income, profits, and capital gains. For use in analysis, we rescale this percentage to a proportion. The data cover 1963-2015 for 168 countries, with broad coverage beginning in the early 1970s.

Taxes on International Trade as % Revenue (ICTD, IMF)

For this measure, we start with the Government Revenue Dataset from the International Centre for Tax and Development (ICTD). We then expand coverage of these data considerably through a variety of sources: International Monetary Fund yearbooks, electronic archives of older IMF data, and a collection of estimates from scholars studying specific countries. Using these source data, we calculate the percentage of total tax revenue that comes from taxes on international trade. For use in analysis, we rescale this percentage to a proportion. The data cover 1960-2015 for 167 countries, with broad coverage beginning in the early 1970s.

Total Tax Revenue as % GDP (IMF, WDI, OECD)

For this measure, we start with the Government Revenue Dataset from the International Centre for Tax and Development (ICTD). We then expand coverage of these data considerably through a variety of sources: the OECD, International Monetary Fund yearbooks, electronic archives of older IMF data, and a collection of estimates from scholars studying specific countries. Data on GDP in local currency units comes from the IMF and WDI. Using these source data, we calculate total tax revenue as a percentage of GDP (resource revenues are not included as tax revenues). For use in analysis, we rescale this percentage to a proportion. The data cover 1960-2015 for 167 countries, with broad coverage beginning in the early 1970s.

Weberianness (Rauch and Evans 2000)

An index created from expert ratings on the degree to which state agencies involved with economic policy exhibit Weberian characteristics: degree of hiring through meritocratic processes, longevity of employment in agencies, prospects for promotion within agencies, degree to which agency

staff remain in public service rather than move in and out of public sector, salary parity with private sector for positions requiring comparable training, proportion of earnings coming through salary rather than bribe collection, and the availability of non-public sector employment options for graduates of elite universities. Country experts were asked to rate the years 1970 to 1990. We use data for 34 countries.

Online Appendix B   Country Plots

The following Figures B.1, B.2, B.3, B.4, B.5 and B.6 show Capacity estimates and confidence intervals for for all countries included in the dataset in 1960, 1970, 1980, 1990, 2000, and 2010. As expected, countries at the upper end of the Capacity spectrum remain to some extent stable over the 40-year period while greater variance is evident among lower- and middle-levels of Capacity. B.7 shows the evolution of Capacity from 1960-2015 for Chile, Haiti, Iraq, and Singapore.

Figure B.1: Posterior Distribution of Capacity in the Year 1960
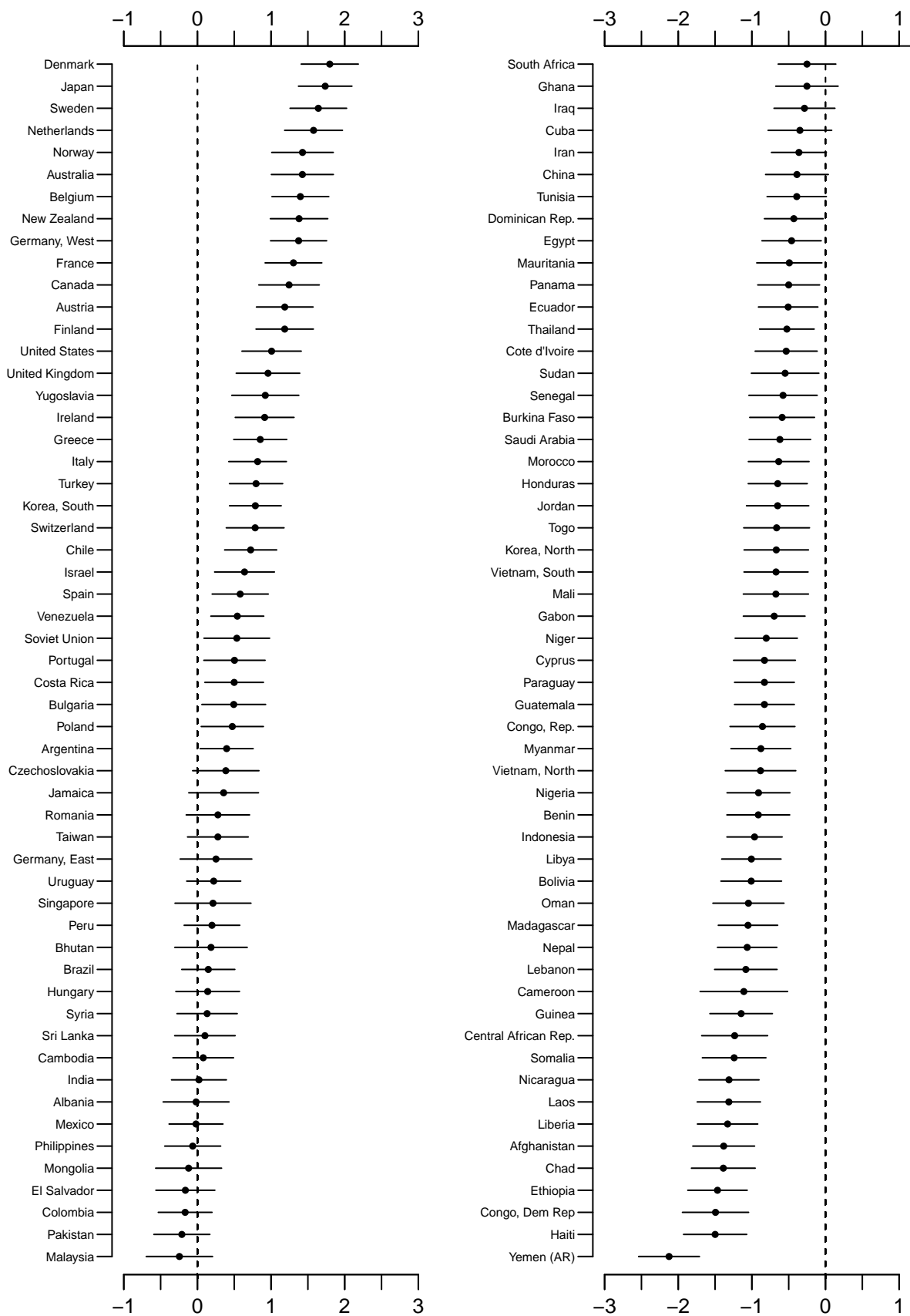
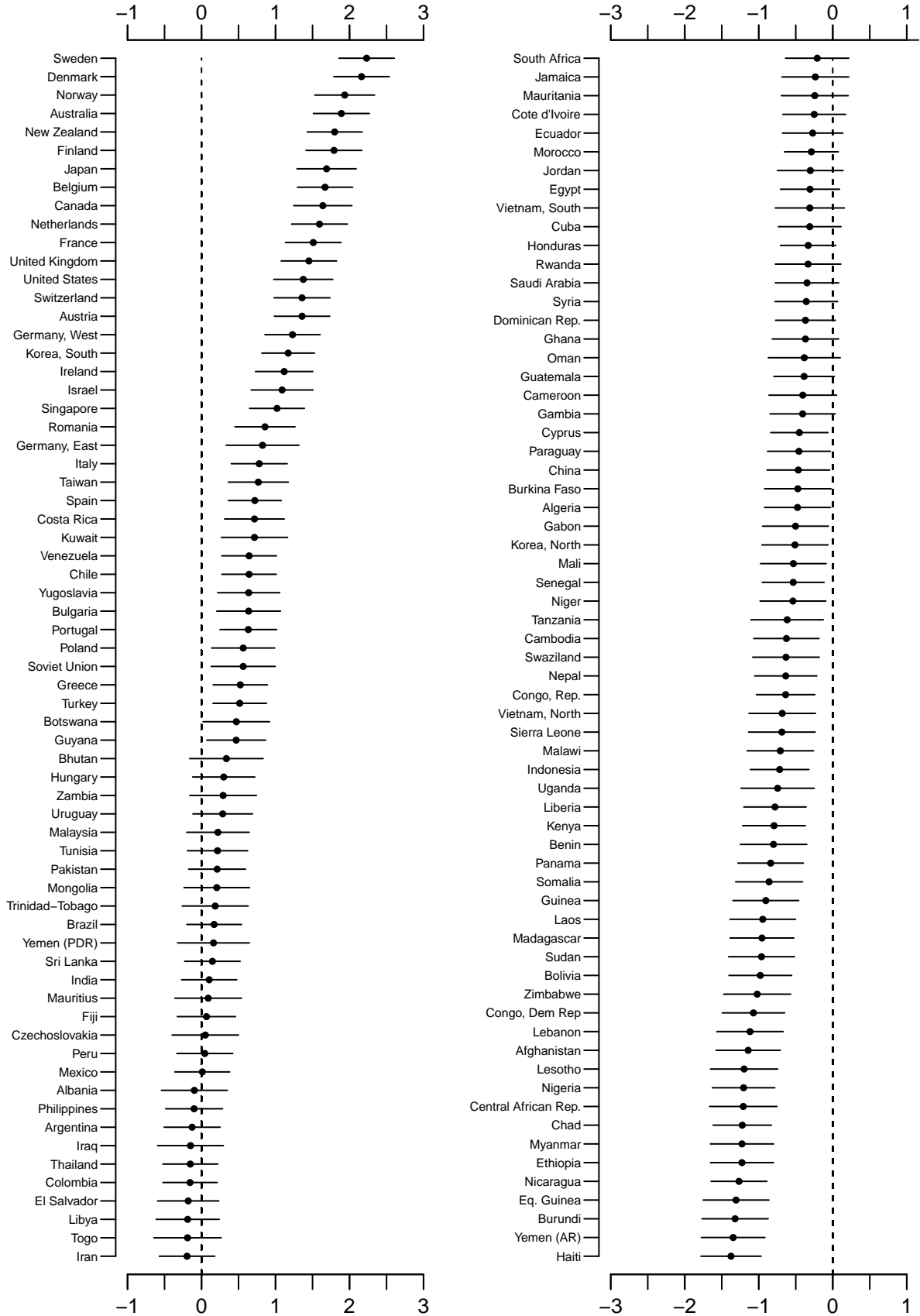Figure B.2: Posterior Distribution of Capacity in the Year 1970

Figure B.3: Posterior Distribution of Capacity in the Year 1980
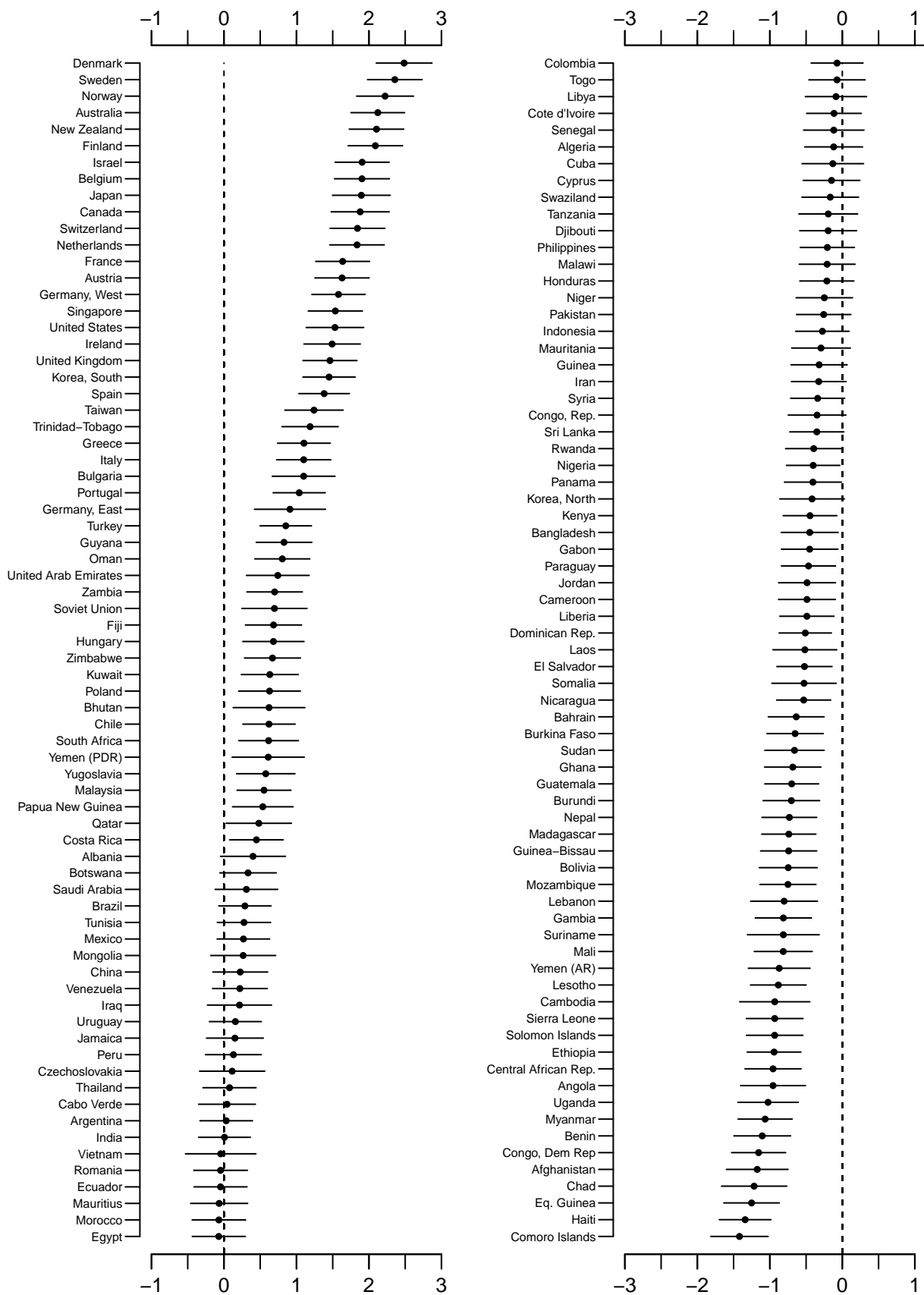
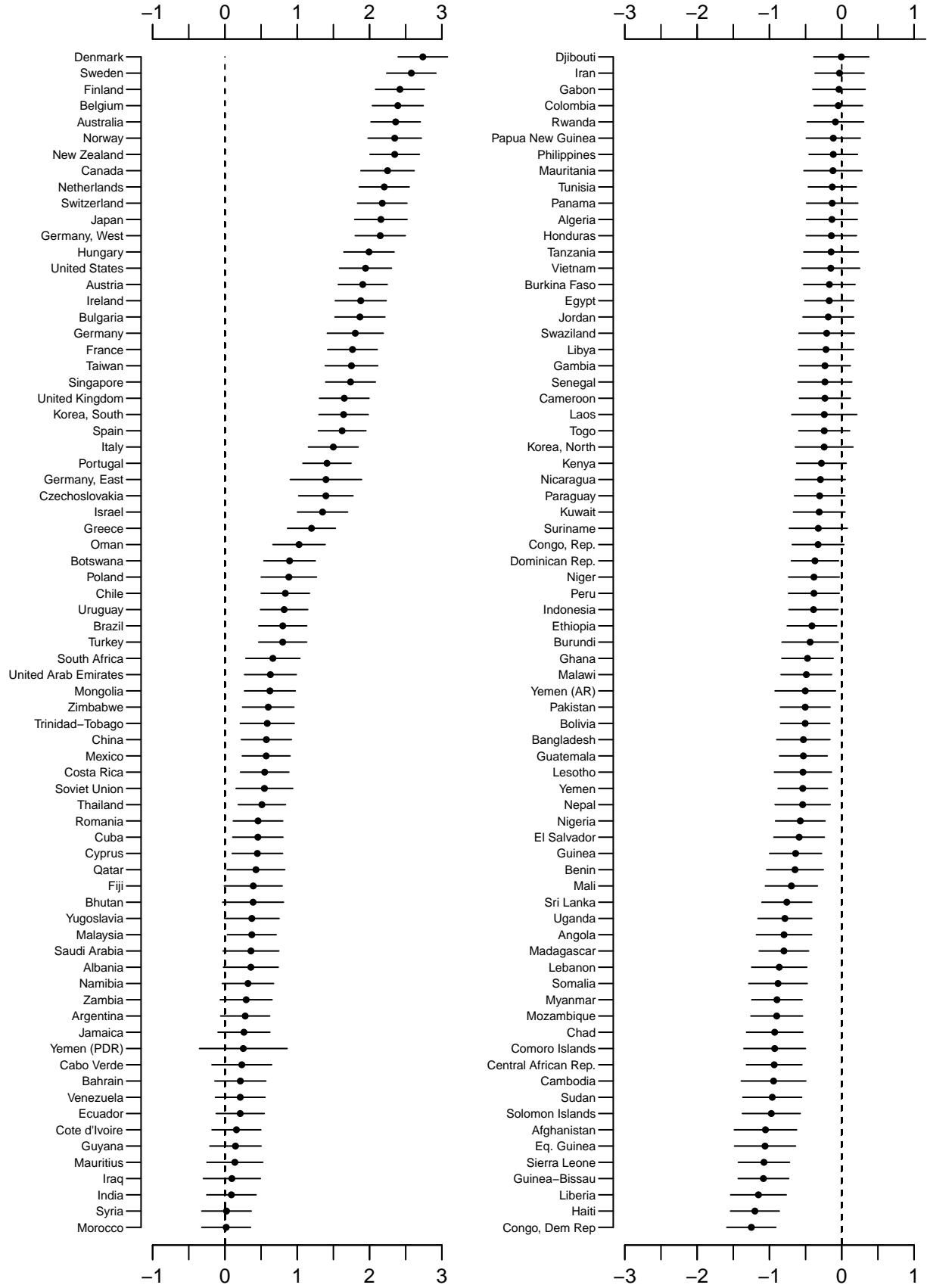Figure B.4: Posterior Distribution of Capacity in the Year 1990

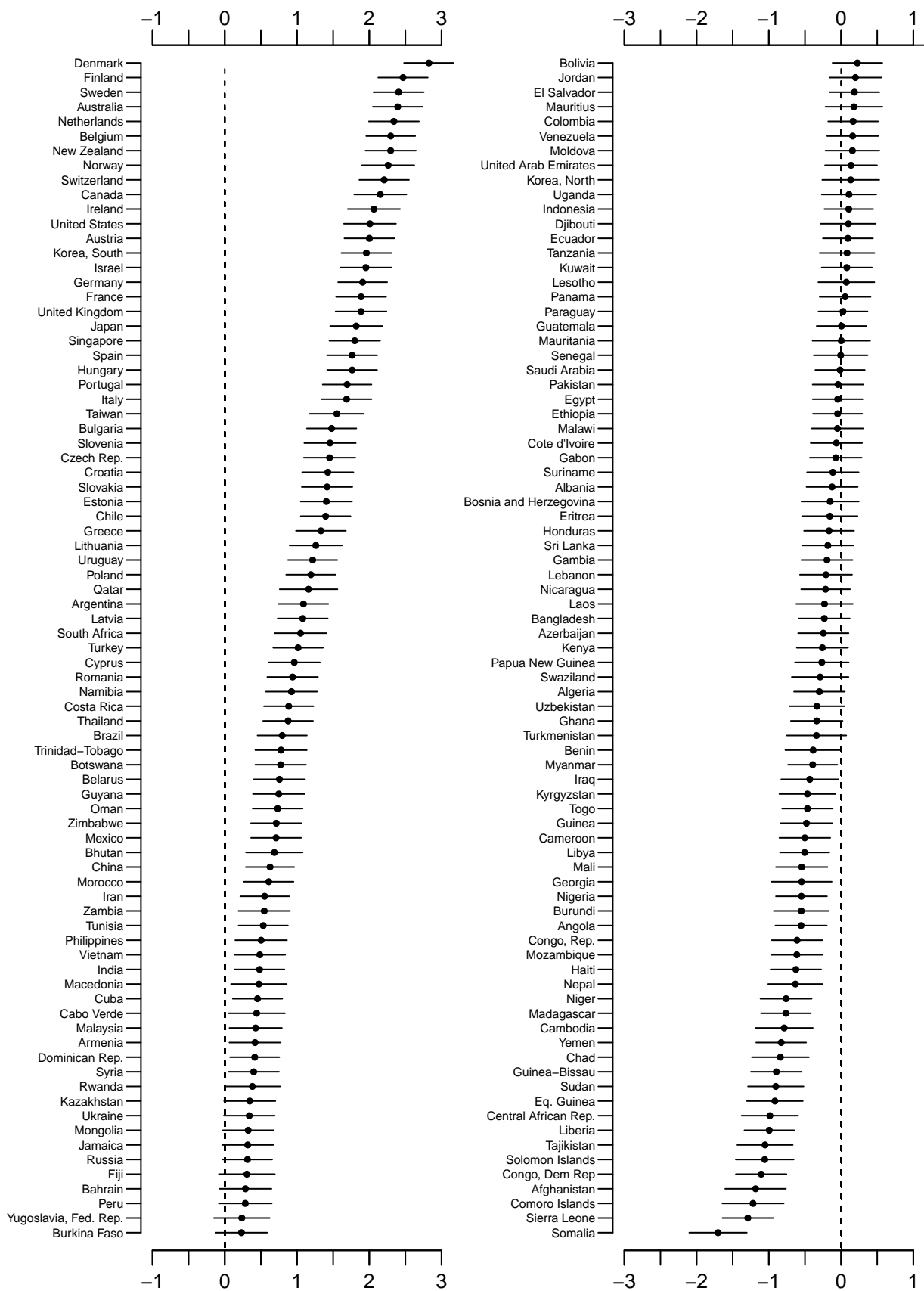Figure B.5: Posterior Distribution of Capacity in the Year 2000

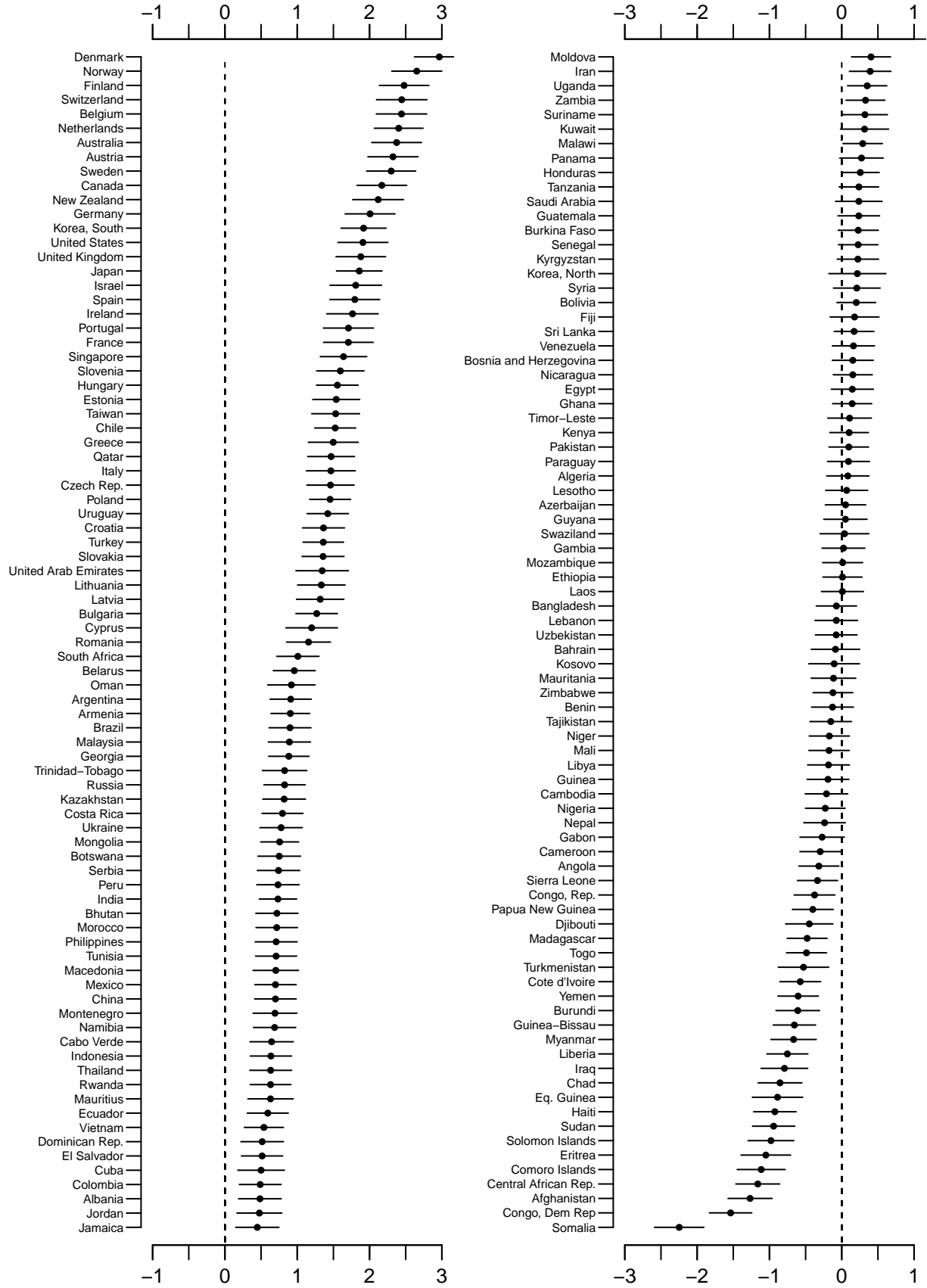Figure B.6: Posterior Distribution of Capacity in the Year 2010

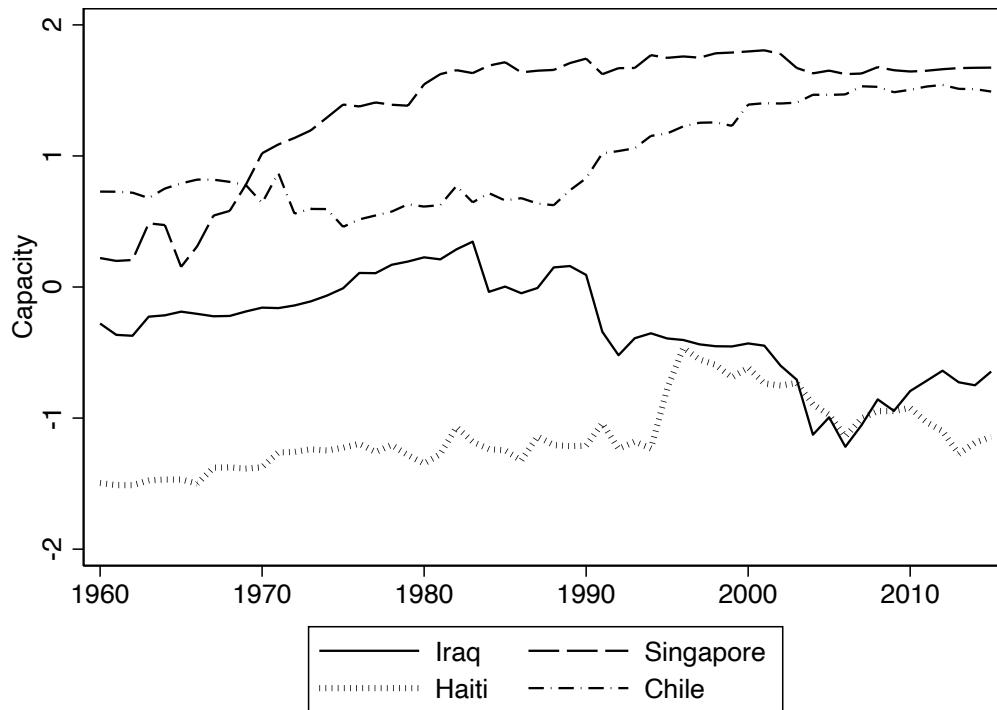Figure B.7: Capacity in Four Sample Countries (1960-2015)

Figure B.7 shows the evolution of Capacity in four countries over time. Chile's experience, as described by Garretón et al. (2003), began with Pinochet's expansion of the coercive apparatus, followed in the democratic period beginning in 1990 by a series of administrative reforms designed to modernize administrative institutions and management structures. In Singapore, thanks to support from a broad coalition of social groups (Crone, 1988), the dominant People's Action Party has grown and maintained its strong capacity to regulate social and economic life not only through coercive means, but also through its skilled and efficient bureaucracy. Steady growth in the Capacity measure appears to capture this pattern. The sharp decrease in Capacity in 1965-1966 is likely due to Singapore's separation from Malaysia in that period.

At the other end of the spectrum lie countries such as Iraq, which in 1960 possessed average scores on the Capacity measure but by 2015 had fallen far below average due to civil and international conflict and long bouts of destructive leadership. A fourth country depicted Figure B.7 – Haiti – experienced a rise in Capacity after Jean-Bertrand Aristide returned to power in 1994,

following a period of military rule. Yet, with ongoing political instability and an earthquake in 2010, Capacity fell back down to previous levels.

Online Appendix C   Correlations with Concepts

Table C.1: Correlations of Estimates with Indicators of Other Concepts

Indicator	Source	r	N
Civil war	Haber and Menaldo (2011)	-0.26	6637
Internal Armed Conflict	Clio Infra	-0.22	5639
Inflation	Clio Infra	-0.05	5938
International Armed Conflict	Clio Infra	-0.03	5639
Oil Income per capita	Haber and Menaldo (2011)	0.06	6604
Consecutive Presidential Elections	V-Dem v9	0.15	8252
(log) Population	UN	0.17	8253
Urbanization	Clio Infra	0.19	5249
Urban population	Clio Infra	0.22	5249
GDP growth	Maddison (2018)	0.27	6943
Political competition	Polity v4	0.33	8239
Imports	Barbieri and Keshk (2016)	0.33	7438
Exports	Barbieri and Keshk (2016)	0.34	7842
Corruption Perceptions Index	Transparency International	0.34	2629
Number of Parties in Legislature	V-Dem v9	0.37	7034
Multiparty Elections	V-Dem v9	0.51	2103
Legislature Controls Resources	V-Dem v9	0.54	7407
Polity2 Index	Polity v4	0.55	8162
Civil Society Participation	V-Dem v9	0.56	8249
Civil Society Women's Participation	V-Dem v9	0.56	8249
(log) GDP per capita	World Bank and others	0.79	8254

Online Appendix D   Dimensionality Tests with Factor Analysis

With non-overlapping coverage for many of the indicators used in our analysis, the use of conventional tests of dimensionality such as factor analysis are difficult to implement. Previous work using factor analysis to assess dimensions of state capacity has overcome this coverage problem by using the types of economic and regime data we advise against. (Hendrix 2010; Fortin-Rittenberger 2014). For example these works have used statistics on fuel exports, GDP per capita, Polity 2, and contract-intensive money. Since our approach seeks to avoid the use of these indicators, we take a different approach to conduct supplementary tests of dimensionality. We combine multiple imputation to address missing data with maximum likelihood factor estimation (Truxillo 2005).

Since coverage in our dataset is more extensive in recent decades, we conduct this test with data from the twenty-year period covering 1995 through 2015. This means that the Administrative Efficiency (Adelman and Morris 1967) and Weberian (Rauch and Evans 2000) measures drop out of the analysis. We use multiple imputation to estimate values of missing data for the remaining indicators. We then conduct factor analysis using a maximum likelihood iterative approach that pre-specifies three dimensions. We use oblique promax rotation which, unlike orthogonal rotations, allows correlation between the resulting factors. The factor loadings and uniqueness scores for each of the three dimensions are reported in Table D.1.

The results of the factor analysis further underscore the difficulty of empirically measuring state capacity dimensions. Indicators of both administrative and extractive capacity load highly on Factor 1. Factor 2 appears to capture some kind of "stateness" dimension in which there is strong monopoly of force and state authority over territory – both of which are theorized to relate closely to coercive capacity. Factor 3, however, also appears related to coercive capacity with police and paramilitary indicators loading the most heavily. However, this third factor also sees high loadings for some of the extractive capacity indicators. In short, none of the three factors represents a single theorized dimension.

Table D.1: Factor Analysis Results

	Factor 1	Factor 2	Factor 3	Uniqueness
Qual. of Budgetary and Financial Management	0.86	0.11	-0.17	0.25
Statistical Capacity	0.80	0.03	0.04	0.30
Quality of Public Administration	0.62	0.37	0.01	0.21
Efficiency of Revenue Mobilization	0.62	0.27	0.09	0.29
Rigorous and Impartial Public Administration	0.61	0.25	0.05	0.36
Fiscal Capacity	0.60	0.15	0.06	0.47
Bureaucratic Quality	0.54	0.24	0.22	0.32
Total Tax Revenue as % of GDP	0.51	0.25	-0.10	0.59
Information Capacity	0.51	0.05	0.12	0.65
State Antiquity Index	0.48	-0.16	0.19	0.75
Census Frequency	0.41	0.17	0.04	0.71
Taxes on Income as % of Taxes	0.41	-0.03	0.18	0.76
State Authority over Territory	0.16	0.70	-0.07	0.41
Law and Order	0.14	0.56	0.19	0.41
Monopoly of Force	0.14	0.86	-0.07	0.17
(log) Military expenditures per capita	0.12	-0.05	0.98	0.00
(log) Military Personnel per 1,000 in pop	-0.28	0.02	0.71	0.55
(log) Police Officers per 1,000 in pop	-0.35	0.21	0.18	0.89
Taxes on International Trade as % of Taxes	-0.73	0.15	0.01	0.57

Online Appendix E   Dimensions of State Capacity

Table E.1: Differing Conceptual Frameworks in the Literature

Bäck and Hadenius (2008)	Administrative, Stateness
Besley (2009)	Fiscal, Legal
Besley and Persson (2008)	Fiscal, Legal
Besley and Persson (2011)	Coercive, Fiscal, Legal
Berwick and Christia (2018)	Extraction, Coordination, Compliance
Brautigam (1996)	Regulatory, Administrative, Technical, Extractive
Cammett and MacLean (2011)	Regulatory, Administrative, Fiscal
Cardenas (2010)	Fiscal, Bureaucratic/Administrative, Military, Quality/Coherence of Political Institutions
Centeno (2017)	Order/Reach, Economic Development, Inclusion, Equity
Cole (2015)	Bureaucratic, Coercive, Territorial Reach, Nonmilitary Material Capabilities
Dincecco and Katz (2016)	Administrative, Fiscal
Fjelde and Cardenas (2009)	Coercion, Co-optation, Cooperation
Fortin-Rittenberger (2014)	Infrastructural, Coercive
Geddes (1996)	Bureaucratic/Administrative
Hamm, King, and Struckler (2012)	Fiscal, Bureaucratic
Hendrix (2010)	Military Power, Bureaucratic/Administrative, Quality/Coherence of Political Institutions
Hendrix and Young (2014)	Bureaucratic/Administrative, Military
Johnson and Koyama (2017)	Fiscal, Legal
Kocher (2010)	Centralization, Bureaucratic, Fiscal/Wealth, Institutional Constraints, Military Capabilities
Larsson (2013)	Fiscal, Legal/Administrative
Lindvall and Teorell (2016)	Human, Material, Informational
Majeed and Gillani (2017)	Amount, Ability, Position
Piano (2019)	Production Technology, Price Discrimination, Competition
Savoia and Sen (2015)	Bureaucratic/Administrative, Legal, Infrastructural, Fiscal, Military
Soifer (2008)	Capabilities, Weight, Subnational Variation

Online Appendix F   Coverage Comparison

Table F.1: Large-Sample Measures Related to State Capacity

Measure	Years	Countries	N
Bureaucratic Quality (PRS)	1984–2019	141	4649
Capacity	1960–2015	177	8254
Fiscal Capacity (V-Dem)	1789–2018	196	24568
Fragile States Index (Rice & Patrick)	2005–2015	178	2527
Government Effectiveness (WGI)	1996–2018	214	4098
Information Capacity (Brambor et al.)	1750–2015	85	17149
Rational-Legal (Hendrix)	1984–1999	95	1408
Relative Political Efficiency (Arbetman-Rabinowitz et al.)	1960–2011	172	7669
Relative Political Reach (Arbetman-Rabinowitz et al.)	1960–2011	159	7437
Rigorous Public Administration (V-Dem)	1789–2018	199	26160
State Authority over Territory (V-Dem)	1789–2018	194	18842

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