

# Size and Democracy Revisited

**John Gerring**

*<jgerring@bu.edu>*

**Dominic Zarecki**

*<dominicz@bu.edu>*

*Boston University  
Department of Political Science  
232 Bay State Road  
Boston MA 02215*

Comments welcome!  
Please do not cite without permission

*Draft: September 22, 2012*

**Abstract.** The population size of a polity is generally thought to be inversely related to its prospects for democracy: polities are more likely to maintain a democratic form of rule insofar as they are small. In the modern era (1800-), however, we argue that a larger population enhances the likelihood of achieving and maintaining electoral democracy. This is so because a larger population increases competition among elites and provides a variety of constraints against would-be political monopolists. The argument is tested with a series of crossnational research designs using historical and contemporary data.

Word count: 12,648

Word count without appendix: 11,500

In the view of most commentators, size impedes the development of popular rule. Polities are more likely to create and maintain a democratic form of rule insofar as they are small. We refer to this as the classical view since it has an ancient pedigree and is echoed in contemporary social science.<sup>1</sup>

Exemplars for the classical perspective are found in the city-states of ancient Greece and Renaissance Italy, on the one hand, and empires from time immemorial on the other. The first set of polities is small and highly democratic (at least by the standards of the day), while the second set is large and makes no pretension to democratic rule. This seems to offer strong confirmation of the thesis that, when it comes to democracy, small is beautiful. Likewise, the transition from republic to empire, understood as an enlargement of territory and peoples, is usually understood as a loss of popular control. The Roman example looms large. Over the broad sweep of written history population may be inversely correlated with democracy (Colomer 2007: ch 8), and especially with the participatory component of democracy (Alesina, La Ferrara 2000; Anckar 2004; Costa, Kahn 2003; Oliver 2000; Remmer 2010; Weldon 2006) and with subjective feelings of political efficacy (Lassen, Serritzlew 2011).

In the modern era, however, there are reasons to doubt the classical narrative. Among the handful of countries that have successfully resisted the trend towards elections as a mechanism for choosing national leaders, almost all are small-to-middling in size.<sup>2</sup> There seems to be a strong association between elections and size in the postwar era, though things become more complicated when one considers the quality of those elections (as we do in subsequent sections).

In this study, we argue that size has a positive impact on democracy, with the following caveats and clarifications. First, our theory regards the population – not the territory – of a polity as a measure of size.<sup>3</sup> Likewise, wherever a polity distinguishes clearly between different categories of people our theory applies only to those who are regarded as full members of the polity. Thus, if a polity distinguishes citizens from those who are subjects, slaves, or residents, we count only citizens as members of that polity. Similarly, if there is a clear distinction between a metropole and its peripheral units (colonies, protectorates, trust territories), we count as part of that polity only those with metropole status.<sup>4</sup>

Second, we are primarily interested in the modern era of human history – roughly, the past two centuries. Prior to that, limited communication and transportation networks (Stasavage 2010), as well as limited understanding of the representative principle (Pitkin 1967) may have structured a different relationship between size and democracy.

---

<sup>1</sup> The intellectual history, stretching back to Plato, Aristotle, Montesquieu, and Rousseau, is reviewed in Dahl, Tufte (1973: ch 1). See also Alesina, La Ferrara (2000), Almond (1956), Anckar (2002, 2004), Anckar and Anckar (1995), Colomer (2007), Dahl (1971: 109-11), Diamond, Tsalik (1999), Hadenius (1992: 61-2, 122-7), Lijphart (1977: 65), Ott (2000), Stasavage (2010), and work reviewed in Table 1.

<sup>2</sup> The list of polities without elections for national office for some period of the postwar period (not counting periods of transition or state collapse) includes Bahrain, Bhutan, Brunei, Burma, China, Eritrea, Guinea-Bissau, Jordan, Kuwait, Libya, Liechtenstein, Morocco, Oman, Paraguay, Saudi Arabia, Swaziland, Qatar, the United Arab Emirates, and the Vatican. China is the only large country that has resisted the trend toward national elections.

<sup>3</sup> It follows that work focused on the territorial size of polities is only peripherally relevant (Green 2012; Knack, Azfar 2003; Olsson, Hansson 2011). Of course, in previous historical eras one can expect that there was a strong correlation between population and territory, for ancient modes of production did not allow for very dense concentrations of human settlement. In the modern era, however, these concepts have become highly differentiated; indeed, the correlation between the two is relatively modest (Pearson's  $r=.54$ ). In any case, we see no theoretical reason to suppose that a larger land area would lead, by itself, to a more democratic regime-type.

<sup>4</sup> For example, the population of Britain in 1900 is understood to include the citizens of the United Kingdom (England, Wales, Scotland, and Ireland), including those who lived abroad but does not include non-citizen subjects of the British Empire.

Third, within the umbrella-term of democracy our argument focuses on its electoral and liberal dimensions. From this perspective, democracy is achieved through electoral competition among leadership groups and through constitutional constraints on the exercise of power. We shall refer to this conception of democracy as “Schumpeterian.” Other conceptions of democracy – participatory, egalitarian, majoritarian, or deliberative (Coppedge, Gerring 2011) – lie outside the scope of the theory (and may exhibit contrary trends).

With these clarifications, we argue that a large population fosters greater democracy. The first section of the paper explores causal mechanisms. In the second section, we test the hypothesis with panel data from 1815 to 2004. The final section summarizes our conclusions and discusses several possible extensions.

## I. Theory

The population of a polity is not directly manipulable and, as such, is difficult to conceptualize as a cause (Holland 1986). Proximal factors influencing the population of a polity such as fertility, mortality, and migration are also not directly manipulable. However, the main distal cause of a country’s current population is the extent of its land, in particular its arable land. This, in turn, is a product of boundary-drawing events that may be regarded as manipulable causes.

In order to clarify the *ceteris paribus* conditions of our theory a brief thought-experiment may be helpful. Let us suppose that a large territory in the developing world is inhabited by diverse ethnic groups with somewhat distinctive religious and linguistic practices. The territory is geographically uniform (there are no important differences in topography, waterways, climate, soil, and so forth) and forms of political organization and levels of socioeconomic development are broadly similar throughout the land. One day, by the dictate of a colonial power, the territory is divided into two polities, *A* and *B*, which eventually emerge as sovereign states. Polity *A* incorporates twice the population of Polity *B* and therefore also possesses greater diversity (understood as the number of distinctive social groups). The two countries are otherwise identical. Under these conditions, what might be the impact of this difference in size on each polity’s regime-type? Which polity – *A* or *B* – has greater prospects for achieving Schumpeterian democracy?

Our theoretical discussion begins with a brief presentation of the classical thesis – that small states are more likely to become democratic. We then proceed to present our reasons for why the relationship might be the reverse.

### The Classical Thesis

Although it breathes the air of common sense, the classical thesis has rarely been put forward as an explicit theory. Consequently, the theoretical underpinnings of the thesis are somewhat difficult to reconstruct. Nonetheless, three assumptions seem paramount. In this section we shall argue that, while plausible, these assumptions are also open to question.

First, it is sometimes argued that small polities offer greater opportunities for exit, an option that may constrain the rapacity of elites (Rogowski 1998; Tiebout 1956). The difficulty is that we have no evidence that governments are concerned with attracting and retaining citizens. Autocrats, in particular, may be happy to see dissidents leave. If exit options are easier in a small state this may serve as a safety valve, helping to stabilize authoritarian regimes.

Second, it is sometimes argued that community identity and consensus are easier to construct, and social order easier to maintain, when communities are small. The larger the polity the

greater the potential number of conflicts, which does not bode well for democracy (Colomer 2007: 58; Dahl, Tufte 1973; Ott 2000: 98). Yet, it is not clear that strong communal identity and social order lead a polity in democratic directions; these factors may simply reinforce authoritarian tendencies. While it is true that violent conflicts are more common in large countries, it is also true that they are often less destabilizing. Where the population is large, and presumably diverse, cleavages are likely to be cross-cutting and conflicts are often local rather than national in scope. As such, they may be more easily contained. India's (post-partition) history offers a case in point, fulfilling Madison's premise that the violence of faction might be calmed not by suppressing conflict but rather by enlarging the scope of the polity so that multiple conflicts are embraced and none are threatening to the survival of the polity, or of democracy.<sup>5</sup>

Third, it is generally assumed that establishing a democracy is easier to accomplish in a small country than in a large country. This is true in the sense that a small country generally poses fewer coordination problems, fewer logistical challenges, and fewer constituencies whose approval and participation would be required. Rule of law may also be easier to establish (Olsson, Hanssen 2011). Consequently, a democratic transition in Bhutan is probably easier to manage than a democratic transition in China. However, this argument rests on a crucial assumption: that current power-holders wish to share power with others (under democratic auspices) rather than to rule unchallenged. Where the assumption holds true (e.g., present-day Bhutan, so far as we can tell), the argument is convincing. Unfortunately, there are relatively few cases of democratic transitions ushered in from above with no pressure from below, i.e., in which autocrats voluntarily cede power. Thus, although it may be easier for benevolent autocrats to create democracies in small countries than in large countries this fact (if indeed it is a fact) is not terribly relevant for explaining variation across nation-states.

Our theorizing begins with the assumption that most leaders, most of the time, prefer to rule in an unfettered manner and accede to democracy only when their options are limited. Institutional factors, rather than the voluntaristic behavior of leaders, are thus the focus of our argument.

### **Competitiveness and Constraints**

In our view, the most important mechanisms tying population size to democratic governance center on the behavior of elites – understood as the educated classes (i.e., middle classes). In particular, we shall argue that a large population enhances elite competition, which in turn serves as a constraint on the ability of any single leader (or leadership clique) to monopolize power. Competition and constraints are thus the twin sides of the same coin. In much the same way that large markets foster greater competition among firms and constraints on market leaders (Aumann 1964), a large population should foster competition among elites and constraints upon political leaders. Four overlapping and complementary factors combine to produce this dynamic.

First, in a large polity (*ceteris paribus*) there are a greater number of latent cleavages within the elite and within society generally. These cleavages may be rooted in race/ethnicity, caste, religion, region, social class, or sector. Any latent cleavage provides a potential base of support, and in a larger (and more diverse) society there will be more divisions and thus more opportunities for opposition groups to capitalize upon.

Second, a large polity is likely to be more organizationally developed. That is, organizations will be larger, more differentiated, and more professional, and there will be more of them. This includes political parties, labor unions, business and professional associations, religious and ethnic

---

<sup>5</sup> It is also in line with a well-established theory of social conflict harking back to Georg Simmel (1955) and Lewis Coser (1956), namely, that “the frequency of intra-group conflict is positively related to the size of a group while the *intensity* of conflict is negatively related to the size of the group” (Black 1974: 1245).

associations, universities, media outlets, and other civil society organizations. Each provides a ready-made base which opposition groups may mobilize.

Third, a large polity is likely to provide a greater number of potential leaders for each leadership position (within the public sector and civil society). Let us assume that a small percentage of the general population possesses the social and educational background requisite to qualify for a leading role in a country's political affairs. We shall assume that their numbers grow in a linear fashion with population so that the ratio of elites/masses is constant. By contrast, the number of leadership positions in a country does *not* grow in tandem with its population. The executive, almost by definition, is likely to remain in the hands of a single person or an extremely small group. Legislatures tend to be larger in larger countries, but not proportionately (Taagepera 1972). For example, in Tuvalu there are roughly 656 persons per legislator; in India, by contrast, there are over 1.5 million persons per legislator (including both houses of the legislature).<sup>6</sup> As a consequence, there is likely to be much greater competition for leadership positions in India than in Tuvalu. Indeed, there may be very few viable contestants for top offices in a micro-state, i.e., persons with the requisite education, experience, money, and social networks to mount a serious challenge to ruling party. This, in turn, means that the advantages of incumbency are enhanced. This is not simply a factor in elections, where the absence of strong challengers depresses competition and turnover (Mann, Wolfinger 1980) but also in extra-constitutional challenges to an autocratic regime (via social movements and insurrections).

Finally, in a large polity it will be more difficult for state actors to monitor, coopt, coerce, or exile potential dissenters. Bear in mind that the elite within a small polity is highly conspicuous and often confined to a few key families, clans, tribes, or ethnic groups. Surveillance over this group is easy for the intrusive autocrat, even with a minimal security apparatus. This means that institutions within civil society are likely to be weak relative to the state and less able to perform their function as a counterweight to the state. By contrast, in a large polity the actions of elites are more difficult to track and to control, for there are many of them and the size and density of society offers many places to hide. It is consequently difficult for the autocrat to expose and root out oppositional activities.

Each of these mechanisms suggests that population should provide greater competition among elites and greater constraints on leaders, thereby making a democratic outcome more likely. We expect that these factors apply equally to movements toward and away from democracy, i.e., greater population should enhance the probability of democratization and diminish the probability of democratic breakdown.

## II. Empirics

Recent work on our theoretical question seem to confirm the classical narrative. Indeed, no extant study shows a positive and statistically significant relationship between population and democracy. Yet, there are reasons to be skeptical of this apparent consensus.

While the effect of size on participatory democracy and efficacy has received extensive attention (see previous citations), the effect of size on Schumpeterian democracy has received very little attention. We have been able to discover only seven published crossnational studies of Schumpeterian democracy over the past several decades that include population as a covariate. Essential features of these studies are summarized in Table 1.

---

<sup>6</sup> Population data are based on the World Bank's 2011 estimate; legislator data are from the CIA World Factbook.

[Table 1 about here]

Only one of these studies is focused on our topic of interest (Ott 2000), and the latter is limited to simple cross-tabulations across two decades. The remaining six studies, although more sophisticated, are focused on other theoretical questions. This means that measures of population serve as controls and are not subjected to sustained inquiry. Moreover, various aspects of these research designs may bias results against our hypothesis of interest. This includes (a) through time rather than cross-country analyses, (b) the inclusion of post-treatment covariates that may be affected by population, (c) the neglect of diffusion as a background factor in democratization, and (d) small and perhaps unrepresentative samples.<sup>7</sup> These research design issues, combined in various ways, explain why extant studies do not demonstrate a positive relationship between population and democracy.

## Research Design

This brings us to a discussion of our chosen research design, which exploits cross-country variation in population and regime-type over the past two centuries in a global sample. Before examining the data it is important to discuss our assumptions about the data generating process. Factors affecting a country's population (i.e., assignment to treatment) may be divided into three categories: *migration*, *demographics* and *geography*.

At one point or another in history, in-migration provided the population of all countries outside of Africa. Our concern is with migration occurring within the last two centuries, and especially during the postwar era. Recent migration has had a significant impact on aggregate population primarily in small and relatively rich countries (e.g., the Gulf states), where there is great demand for labor. However, migrants often are not granted citizenship and thus are not counted as members of the polity in this study (either theoretically or empirically). In any case, patterns of in- and out-migration seem to be driven primarily by proximity and economics, and only peripherally by the nature of a regime.<sup>8</sup> As such, migration patterns are regarded as a source of noise rather than of bias.

Demographic influences on population are more problematic. There is evidence to suggest that democracies have lower mortality rates (Gerring et al. 2012; but see Ross 2006) and there is strong (and so far as we know uncontested) evidence that democracies have lower fertility rates (Beer 2009; Przeworski et al. 2000). Over time, these influences may balance each other out. However, one must be concerned about short-term endogeneity between left- and right-side variables. An even more problematic feature is that short-term changes in mortality and fertility are influenced by war, climatic events (e.g., drought), political disorder, and any other sort of disruption – which may also affect a country's regime-type. For these reasons, short-run relationships between population and regime-type are likely to offer a misleading indication of structural factors at work. Indeed, the relationship between  $\Delta X$  and  $\Delta Y$  is much more likely to reflect temporary perturbations than the relationship of theoretical interest. Consequently, we avoid this style of analysis in subsequent tests.

Fortunately, the geographic assignment mechanism is more tractable. First, geographic features of a country are fairly easy to measure. Second, its impact on country population is immense. Indeed, most of the variation in population across countries in the contemporary era is accounted by the total land area and the total arable land within a nation's territory (a fact that

---

<sup>7</sup> For example, Barro (1999) is limited to a small sample (1972-95) data, aggregated by 5-year periods, and including lagged dependent variables (which results in the loss of one panel). The combined effect is to deprive the population/democracy relationship of significance.

<sup>8</sup> David Leblang, personal communication (October 14, 2011).

informs our choice of instruments in an IV model). Of course, geographic factors such as arable land also impact growth (Olsson 2003), which may in turn impact regime-type (Epstein et al. 2006). However, since per capita GDP is measurable this potential confounder can be blocked.

It seems unlikely that the geography of a country is affected by its regime-type or by factors that might influence the development of a particular regime-type. For example, there does not appear to be any empirical relationship between regime-type and secession. Walter (2006) demonstrates that regime-type does not predict violent attempts at secession, and Sambanis and Milanovic (2009) find that economic factors, not regime type, predict calls for sovereignty in 48 economically decentralized states. Of course, one could argue that movements for independence are also movements for self-determination, and hence (in a certain sense) for democracy. Likewise, independence movements often adopt the mantle of democracy, especially in recent years. However, if there is a tendency for independence movements to culminate in democratic regimes then this selection effect should bias our analysis *against* the proffered hypothesis. That is, we should find many small states with democratic constitutions, for the newly formed states are generally smaller than the states they separated from.

Naturally, a country's boundaries are affected by international-system factors such as economies of scale, burdens of heterogeneity, necessity of self-defense, the prominence of international trade, technological developments affecting transport, communications, warfare, and administration, and threats to sovereignty (Alesina, Spalore 2003; Hiscox, Lake 2001; Wittman 1991, 2000). However, because these factors affect all countries equally they are orthogonal to our cross-country analyses. (To the extent that international-system factors change over time their influence is captured by annual dummies.)

A confusing element of our analysis is that the boundaries of countries are mutually determined. A change in one country's borders (in the modern era) affects another country's borders, and hence its population. This appears to violate a strict interpretation of the stable unit treatment assumption, or SUTVA (Rubin 2005). However, the unit of analysis in this study is the polity (for which "country" is a proxy), a unit that may be said to hold constant even in the presence of boundary changes. Perhaps the more important point for present purposes is that border changes are quite modest over the period under observation. Most polities in our dataset retain similar boundaries from the time of independence to the present-day. Moreover, limiting the analysis to countries that have retained stable borders since independence has virtually no impact on the results reported below.

Let us now summarize the previous discussion so that the essential points are clear. We regard data on country population size and regime-type in the contemporary period as the product of a long historical process by which the boundaries of nation-states have been established. The various Treaties of Westphalia, ending in 1648, are generally regarded as a decisive turning point in this process. Outside Europe, countries generally attained their boundaries as a product of colonial treaties and independence struggles of more recent vintage. In either case, boundary formation occurred independent of, and generally prior to, the development of Schumpeterian democracy. That is to say, most states attained their contemporary geography (leaving aside minor border changes) at a time when they were non-democratic. Nor is it likely that other unmeasurable factors contributed to both (a) the geography of nation-states and (b) their eventual regime-type. As such, the assignment of country borders may be regarded as random with respect to the outcome of interest, conditional on observables.

This conclusion depends, of course, on the choice of an appropriate form of analysis. Here it is helpful to compare three archetypal causal models:

$$Y_t = a + bX_{t-1} + cZ_{t-1} \tag{Eq. 1}$$

$$\Delta Y_t = a + bX_{t-1} + cZ_{t-1} \quad \text{Eq. 2}$$

$$\Delta Y_t = a + b\Delta X_{t-1} + cZ_{t-1} \quad \text{Eq. 3}$$

where  $Y$ =regime-type,  $X$ =population,  $Z$ =covariates of no theoretical interest, and  $t$ =time-periods in a panel analysis. (An error term is assumed in each model.) In Model 1, the predominantly cross-sectional analysis, the relationship between population and regime-type is viewed as the product of a long historical process. In Model 2, a country's population at  $t-1$  predicts short-term changes in regime-type at  $t$ . In Model 3, changes in population at  $t-1$  predict changes in regime-type at  $t$ . (This class of analyses includes fixed-effect models as well as first-difference models.) Of these, we regard Model 1 as the most plausible model, with Model 2 as a runner-up. Model 3 is excluded by reason of potential confounders (e.g., inter- and intra-state conflict, state breakdown, famine, and other convulsions) that are likely to affect both  $\Delta X$  and  $\Delta Y$ , for reasons already discussed.

Our study takes five cuts at the material. The first set of tests explores different ways of measuring democracy, different time-periods, and different specifications (Table 2). The second set applies alternate estimators, with some adjustment of specification (Table 3). A third set of tests focus on changes in regime-type (Table 4). A fourth set of tests utilizes matching estimators, with population re-coded as a binary treatment (Table 5). A final set of tests identify quasi-experimental settings in which problems of identification are, arguably, more satisfactorily addressed (Table 6). Definitions and sources for all variables are provided in Table A1 and descriptive statistics in Table A2.

The purpose of these extensive empirical probes is to show that the main effect is robust to a wide variety of approaches, each requiring a somewhat different set of assumptions. It is *not* our intention to provide a precise point estimate for the impact of population on democracy. This would be an implausible level of precision given the nature of the evidence.

### Varying Outcomes, Samples, and Specifications

We begin, in Table 2, by exploring a variety of indicators of Schumpeterian democracy. Given wellknown problems of conceptualization and measurement, this concept will be approached in an ecumenical fashion (Coppedge, Gerring 2011). Since most of these indicators are wellknown we offer only a brief explanation of their source and composition. (A correlation table including all outcome measures is contained in Table A3.)

[Table 2 about here]

Column 1 of Table 2 focuses on a summary index of democracy known as Polity2, drawn from the Polity IV dataset (Marshall, Gurr, Jaggers 2010). It ranges from -10 to +10.<sup>9</sup> Column 2 reconstructs Polity2 as a trichotomous outcome, imposing breakpoints at -5 and +5. Column 3 imposes a binary scale on the Polity2 variable with the cutoff at 5. Column 4 focuses on one of the components of the Polity2 variable, Executive constraints (XCONST). This is defined as “the extent of institutionalized constraints on the decision-making powers of chief executives,” as provided variously by legislatures, ruling parties, councils, military cliques, and/or judiciaries – a seven-point scale (Marshall, Gurr, Jaggers 2010). Column 5 adopts another component of the Polity2 variable, political competition (POLCOMP). This measures the degree of stability, organization, and freedom with which groups compete for political office (PARREG) and the extent to which alternative preferences for policy and leadership can be pursued in the political arena (PARCOMP), forming a 10-point scale (Marshall, Gurr, Jaggers 2010).

Column 6 focuses on another prominent crossnational indicator of democracy, the Political

---

<sup>9</sup> Missing data for micro-states is imputed from other sources.

rights index from the Freedom House dataset ([www.freedomhouse.org](http://www.freedomhouse.org)). This index forms an integer scale from 1 to 7. Column 7 adopts a measure of Competitiveness from Vanhanen (2000), calculated as 100 minus the percent votes won by the largest party in presidential or parliamentary elections (or both, averaged). Column 8 tests another behavioral measure of contestation, this one focused on the Turnover of top leaders, compiled from the Archigos dataset (Goemans et al. 2009). A code of 1 is assigned to any year in which there occurs a change of leadership achieved under regular (constitutional) circumstances, thus excluding coups and revolutions; 0 otherwise.<sup>10</sup>

Column 9 employs a summary index of Contestation constructed by Coppedge, Alvarez, and Maldonado (2008). This index represents the first component generated by an exploratory principal components factor analysis including a wide variety of contemporary (1950-) democracy indicators. As such, it serves as a fitting conclusion to our survey of Schumpeterian democracy.

To facilitate comparisons across models, outcomes with more than three categories are re-scaled from 0-100, arranged so that 100 represents the highest possible level of democracy. For these outcomes, we apply an OLS estimator with Newey-West standard errors and a one-period lag structure to capture temporal autocorrelation.<sup>11</sup> Binary outcomes are approached with logit models (MLE) and 3-category ordinal outcomes with ordered logit models (MLE). For Competitiveness, since quite a number of country-years feature no competition, the distribution features an abundance of zeros, requiring a tobit (random effects) estimator.

For each outcome, three tests are employed. The first test is historical, including all sovereign and semi-sovereign countries from 1815 (or 1820) to the present. Covariates are included only if they are exogenous relative to the factor of theoretical interest, sufficient data is available through the past two centuries, and a strong theoretical rationale can be offered. The hypothesized direction of causal effects is indicated in parentheses next to each variable. These benchmark covariates include GDP per capita, natural logarithm (+); Urban population (+); Island dummy (+); Protestant share of population (+); Muslim share of population (-); and Diffusion, measured as the Polity2 scores of all other countries in a given year, weighted by the inverse of the distance to a country (+); and annual dummies. More detailed definitions as well as sources for these variables are included in Table A1.<sup>12</sup>

The resulting sample for these historical tests consists of 9,000+ observations. Naturally, sample size varies from model to model since data availability for the outcome measure of democracy is not uniform. Indeed, some outcome measures, such as those drawn from Freedom House, are not coded prior to 1960 and thus do not appear in the first set of tests.

In the second test, the benchmark specification is identical but the sample is restricted to the contemporary era (1960-).<sup>13</sup> This ensures that results are not the product of a highly unbalanced

---

<sup>10</sup> Note that turnover in leadership is a feature that we expect to find in electoral democracies and which we generally expect to be more common in democracies than in autocracies. Indeed, some have argued that turnover in power is a definitional characteristic of democracy (Alvarez et al. 1996; Przeworski et al. 2000).

<sup>11</sup> The Newey-West (1987) estimator is an extension of the Huber/White/sandwich robust estimator (White 1980), taking into account not only heteroskedasticity but also autocorrelation. The substitution of ordered logit for OLS in the case of outcomes that might be considered ordinal rather than interval (such as the Freedom House scales), has negligible impact on the findings reported here. Other methods of de-trending the data, such as Prais-Winsten and Cochrane-Orcutt (GLS) estimators, are consistent with the findings presented here, though point estimates vary depending upon the method chosen for calculating rho.

<sup>12</sup> Additional covariates that might also be regarded as causes of democracy were also tested (though not included in the models shown here). These include a measure of age distribution (youth as a share of total population) and a dummy for the Warsaw pact region. The inclusion of these covariates in the benchmark model has virtually no effect on the coefficient for our variable of theoretical interest, population. These covariates are therefore regarded as noise rather than as sources of bias.

<sup>13</sup> Although the specification is identical we use data drawn from the World Development Indicators (World Bank 2007)

panel (since data availability is uneven prior to 1960) or of changing historical relationships between population and democracy. Reassuringly, there is little difference in the aggregate performance of the key independent variable across historical and contemporary samples.

In the third test, a maximal specification is adopted including all of the benchmark factors plus a variety of additional covariates that may serve as confounders (but whose theoretical or empirical relationship to democracy is less well-established). This includes Landlock dummy (-); Latitude, the distance from the equator transformed by the natural logarithm (+); English legal origin dummy (+); European language, percent speaking (+); Ethnic fractionalization, the probability that two randomly chosen individuals belong to the same ethnolinguistic group (?); Religious fractionalization, measured as the probability that two randomly chosen individuals belong to the same religious group (-); Catholic, as share of the population (-); Population density (+); and a series of regional dummies for West Europe (+), Latin America (?), the Middle East (-), and Africa (-). As previously, the hypothesized direction of causal effects is indicated in parentheses next to each variable. (Where no clear hypothesis could be garnered from the literature, a question mark appears.)

Results of the twenty-six tests included in Table 2 indicate a robust positive relationship between population and democracy. Only four tests fail to cross traditional thresholds of statistical significance and only one shows a negative (though not significant) relationship between population and democracy.

Assuming the relationship is causal, how great might be the impact of population on democracy? Here we must establish a benchmark – a change in population that can be evaluated against the outcomes. We shall consider a hypothetical increase in population from 15,000 to 1.5 million, a change that represents a shift in population size from approximately the 10<sup>th</sup> percentile to the 50<sup>th</sup> percentile of the full sample (understood in its raw, unlogged form) – in other words, from very small to average in size. (Impact estimates are reported for the contemporary regression tests only, as their purpose is illustrative and the coefficients do not vary significantly from those obtained in the historical samples.) The benchmark contemporary model reported in column 1 of Table 2 indicates that this would translate into (approximately) an 11% increase in the Polity2 measure of democracy (which, the reader will recall, has been transformed to a 0-100 scale). Impact estimates for the other continuous measures of democracy tend to hover around this mark, some more and some less, as shown in Table 2. For categorical outcomes, impact is measured as the probability of achieving the highest level of democracy. Again, we find impact estimates that, while not huge, are by no means negligible.

### Alternate Regression Models

Interpreting observational data is always fraught, and nowhere more so than when relationships are distal and the treatment is not applied in discrete interventions (allowing for clearly delineated pre- and post-tests). In this section we explore a series of robustness tests focused on the Polity2 variable – which, whatever its flaws, has become the industry standard. Results are displayed in Table 3.

[Table 3 about here]

Model 1 reproduces the benchmark model from Model 1 in Table 2. Subsequent tests introduce alterations in the benchmark. Commentary on the results is minimized, as they tend to confirm the benchmark model and in any case can be obtained directly from the table.

Model 2 provides a minimal specification, including only the diffusion variable. Model 3 removes of the two largest democracies from the sample – India and the United States. Model 4

---

to measure per capita GDP and urbanization in the contemporary era, rather than Maddison (2010) and Correlates of War (for the historical sample). This is because the WDI has better coverage (for the contemporary era) and is probably more accurate.

replicates the benchmark model with a “full” sample, using multiple-imputation techniques (King et al. 2001) to impute missing data for all sovereign countries and a few semisovereign territories with enough autonomy to determine their regime-type (e.g., Hong Kong). Model 5 aggregates the data at 10-year intervals. Here, the unit of analysis is the country-decade rather than the country-year – a plausible model for any analysis where change on the left- and right-side of the model is sluggish and where long-term, rather than short-term, effects are paramount.

Model 6 presents a simple cross-sectional analysis focused on the year 2000. This is the simplest regression model since it requires no corrections for serial autocorrelation. It is persuasive insofar as one might regard recent years as a reflection of a long-run equilibrium outcome.

Model 7 imposes a 40-year lag on the variable of theoretical interest, population (other covariates follow their standard one-period lag). Model 8 is restricted to a contemporary sample, beginning in 1960; here, population is measured in the first year of the panel (1960) and held constant thereafter (other variables follow their usual one-period lag). Both of these models are designed to alleviate potential problems of simultaneity and feedback in the time-series.

Model 9 re-codes population in order to test for possible non-linearities in the relationship with democracy. Three dummy variables divide the sample into thirds: Small, Medium and Large. (The excluded category is Small.)

Model 10 includes a lagged dependent variable, allowing one to model autocorrelation in a dynamic fashion (Beck, Katz 1995) and also serving to block unmeasured confounders (Elwert, Winship 2011). There is of course the possibility of introducing new confounders via the backdoor opened by a lagged dependent variable (Elwert, Winship 2011).

Model 11 is designed to block a specific factor that may serve as a confounder in the analysis. The scenario this: suppose that, over time, “successful” polities become larger (because they are wealthier and more powerful) and unsuccessful polities fragment or disappear. This is a problem if the factors driving success also drive democratization and are not effectively controlled in our analyses. We control for GDP per capita, so the wealth aspect of the argument is blocked as a potential confounder. (It is, in any case, orthogonal to population – the two are correlated at only 0.07.) In model 11 we add a *capabilities* index (COW 2005) to the model. This index is comprised of six components: total population, urban population, military personnel, military expenditures, iron & steel consumption, and primary energy consumption. Of course, population is our variable of interest and urban population is already a part of the benchmark model. Likewise, the other four variables might in some sense be considered endogenous to population (certainly, the size of a country’s defense forces rests in part on the total size of the population). Nonetheless, it is reassuring to see that the population variable retains its customary relationship to Schumpeterian democracy even when a measure of state power is included in the model.

## Regime Change

In the next series of models, displayed in Table 4, we examine whether population (at  $T_{-1}$ ) predicts short-term changes in democracy, measured as previously by Polity2.

[Table 4 about here]

In Model 1, the dependent variable is transformed by first-differences ( $Y_t - Y_{t-1}$ ), and a lagged dependent variable is added as a covariate. Otherwise, the model follows our benchmark specification.

Since we are now exploring *change* in  $Y$  (from  $t_1$  to  $t_2$ ), rather than the value of  $Y$  (at  $t_1$ ), the constrained nature of the dependent variable becomes a bigger problem. Note that once a country reaches the maximum value on the Polity2 scale (100 in our scale, 10 in the original Polity2 scale) it plateaus, generating a series of zeroes on the first-differenced outcome. (This is not a problem on

the autocratic side of the scale, as the peak value – -7 on the original Polity2 scale – is not at the bottom of the scale.) A simple fix to this problem involves excluding cases where Polity2 = 100. Results are reported in model 2.

Model 3 applies a GMM estimator (Arellano, Bond 1991), regressing a first-differenced outcome on time-varying covariates (invariant covariates must be again excluded because of the fixed-effect format generated by first-differences) and a lagged dependent variable. Instruments are comprised of a series of lags equivalent to the total number of prior observations in the dataset for each variable in the model.

Models 4 and 5 employ a binary outcome variable (cutoff at 5 on the 21-point Polity2 scale) in order to conduct event-history tests of regime transitions. Here, the question is the likelihood (or, more specifically, the rate) of transitioning from autocracy to democracy, i.e., *democratization* (Model 4) or from democracy to autocracy, i.e., *democratic breakdown* (Model 5). Both Cox and Weibull models are plausible and both have been employed in the literature (Bernhard et al. 2001; Kapstein, Converse 2009). We prefer the Weibull model because it explicitly models changes in the likelihood of democratization over time, a likelihood that presumably increases substantially over the period of observation, as noted by Kapstein and Converse (2009). Coefficients indicate hazard ratios, i.e., the estimated percentage change in the baseline hazard rate resulting from 1-unit change in the independent variable. A positive relationship indicates that a transition is hastened; a negative relationship indicates that a transition is postponed. Note that we do not include proximate causes such as economic growth, instability, or trade in our model; nor do we include a measure of democratic consolidation (e.g., number of previous transitions). This is because these factors may be endogenous to the factor of theoretical interest and would therefore serve as confounders.

## Matching Analyses

The previous tests employ parametric models, requiring assumptions about the distribution of the data that may or may not be warranted. In Table 5 we provide a matching analysis that replicates the contemporary (1960-) regression models displayed in Table 2.

[Table 5 about here]

Matching estimators generally require a binary treatment.<sup>14</sup> Unfortunately, there are no natural break-points in the distribution of the population variable and no theoretical reason to suppose that there might be threshold effects. Any recoding of population as a binary variable involves the imposition of an arbitrary breakpoint, imposes a considerable loss of information, and generates a treatment that is non-uniform across units.

On the other hand, we have stipulated that the impact of population on democracy is likely to be realized only when a substantial change in population levels has occurred; slight changes are unlikely to affect regime-outcomes. From this perspective, grouping nation-states into two bins – *small* and *large* – is a plausible reconstruction of the data-generating process.

Assignment into groups is based on country population in 1960 or the first (post-1960) year in which a country becomes independent. In this manner, we generate two bins that are equal in number of countries though not exactly in number of observations (since some countries have shorter time-series).

The two religion variables are recoded from continuous to binary variables in order to facilitate the matching process. Muslim is coded 1 if over 50% of the population adheres to a Muslim sect. In similar fashion, Protestant is coded 1 if over 50% of the population adheres to a

---

<sup>14</sup> One might also apply non-bipartite matching algorithms (Lu et al. 2011). However, doing so still requires the identification of arbitrary bins and complicates the process of finding appropriate matches for each unit, thus weakening the analysis or forcing one to restrict the number of matching covariates.

Protestant sect. This allows us to match exactly on these key variables and probably captures their impact on the outcome as well as a continuous measure. (Results are not contingent on this recoding.)

Treatment and control groups are matched exactly on Year, Island, Muslim, and Protestant. (97% of the pairs are matched exactly on these covariates, as shown in Table 5.) This means that matched comparisons involve different countries within the same year, privileging latitudinal over longitudinal comparisons (as we have in most of the regression tests). Additional covariates are matched with the nearest-neighbor algorithm developed by Abadie et al. (2001).

In order to replicate the specifications used in prior regression tests (see Table 2), the treatment is tested with the benchmark specification first (model 1), and then with the maximal specification (model 2), which adds several additional covariates to the nearest-neighbor matching, as indicated in Table 5.

These tests reveal a positive and statistically significant relationship between the treatment (being in the larger population bin) and a higher level of democracy, as measured by the Polity2 variable. This holds regardless of specification (benchmark or maximal), though there are some differences in effect size. (Interestingly, the effect size increases in the maximal specification.)

To be sure, the employment of a matching estimator does not overcome all the identification problems reviewed above and below. But it does overcome problems associated with parametric models. The cost is that a continuous treatment is rescaled as a binary treatment, with considerable loss of information and attendant noise. This technique cannot generate a precise point estimate but it does reinforce our argument in its very general formulation – i.e., that a positive relationship exists between population and democracy.

### **Quasi-experimental Tests**

None of the foregoing tests are quasi-experimental in nature; as such, they are open to problems associated with biased selection into treatment, problems that may or may not be solved by conditioning on observables. Fortunately, there are two opportunities for quasi-experimental research designs in which assignment to treatment is (arguably) as-if random. The first analyzes a subset of countries composed of islands and the second identifies instruments for the treatment of theoretical interest. Neither setting is beyond reproach; nonetheless, we regard these analyses, presented in Table 6, as providing highly plausible tests of the hypothesis.

[Table 6 about here]

Readers will have noticed that we include a control for Island in most specifications. This deserves some discussion since islands are generally small in size and are more democratic than non-island states. In the case-study literature on size and democracy the example of island-states looms large and is generally interpreted as evidence for the proposition that smallness enhances prospects for democracy (Anckar 2008; Anckar and Anckar 1995; Anckar 2002; Clague et al. 2001; Dahl, Tufte 1973; Dommen 1980; Faris 1999; Hadenius 1992: 125-7; Lockhart, Drakakis-Smith, Schembri 1993; Royle 2001; Srebrnik 2004). However, the relationship between island status and democratic rule may be the product of quite a number of causes. Many island states are Christian – and more specifically Protestant – in religious orientation (Anckar 2008). Many island states were colonized by the British and remain within the Commonwealth. Many experienced an extensive tutelary relationship with a European power, culminating in many years' experience with electoral politics and semi-autonomous governance prior to independence. Many island states have few natural resources, and thus do not suffer from the “resource curse” (Ross 2001). Most islands depend upon international trade or tourism for a large share of their national income. Living on an island may foster a greater sense of national community than one finds in land-based states (Anckar, Anckar

1995: 213, 220-2; Royle 2001). It has also been argued that island-states are less militarist because their sovereignty is more secure than land-based states and because expansionist policies are more difficult to pursue (Clague et al. 2001: 22-3; Faris 1999). In short, quite a number of factors – having nothing to do with size per se – might explain the association between islands and democracy (Anckar and Anckar 1995; Anckar 2002; Clague et al. 2001: 22-3; Dahl, Tufte 1973; Dommen 1980; Hadenius 1992: 125-7; Lockhart, Drakakis-Smith, Schembri 1993; Srebrnik 2004). Consequently, we do not regard the empirical relationship between island states and democracy as evidence for or against the main hypothesis.

However, we do regard islands as a plausible natural experiment in another context. Consider that island states, by definition, are limited in their territorial expanse. Some like Australia are very large; others like Tuvalu are extremely small. The point is that the geographic expanse of an island-state or an archipelago-state where the archipelago is fairly well-defined (e.g., Micronesia) is to some extent exogenously determined. That is to say, it would be difficult for Australia, Tuvalu, or Micronesia to expand beyond the borders of the islands that they inhabit. Indeed, the borders of most islands or archipelagos correspond to the borders of contemporary nation-states. In a few instances such as Haiti and the Dominican Republic the island is subdivided into smaller nation-states; but the island still provides an upper bound on the potential size of a sovereign unit. Following this logic, wherever the bounds of a contemporary nation-state do *not* conform to natural boundaries provided by an ocean (such as Indonesia, which encompasses over 17,000 islands, many of which are non-contiguous), we do not code them as islands. The key conceptual point is boundedness or circumscription (Carneiro 1970).

The product of this selection procedure is a sample of forty-two sovereign island-states (restricted to countries for which information is available on relevant covariates).<sup>15</sup> Model 1 in Table 6 applies the benchmark model in Table 2 to this selective sample. Results are remarkably similar, with a coefficient that is positive, significant, and just slightly weaker than that obtained from the full sample.

A second quasi-experimental test also focuses on the assignment process, that is to say, on factors presumed to influence the population of nation-states. Recall that our interest is not in short-term demographic changes but rather in long-term historical forces that determine whether a state becomes large (populous) or small (sparsely populated). Two geographic factors are paramount in this process: Land area (transformed by the natural logarithm) and the share of land suitable for agricultural production, i.e., Arable land. When these two factors are regressed against population (ln) they account for 77% of the variance.

In order to function as instruments these factors must also be unaffected by the outcome. It seems unlikely that a country's regime-type would impact its land area or arable land, so this assumption seems unproblematic.

The chosen instruments, finally, must impact the outcome only through the variable of theoretical interest (the exclusion restriction), i.e., population. Any alternative paths from  $X$  to  $Y$  must be blocked or must be shown to introduce a negative bias (against the hypothesis under investigation). It seems possible that a larger share of arable land might lead to greater economic development, which might then enhance prospects for democracy (Epstein et al. 2006). However, the two factors are almost perfectly orthogonal to one another and, in any case, this backdoor from

---

<sup>15</sup> Antigua & Barbuda, Australia, Bahamas, Bahrain, Barbados, Cape Verde, Comoros, Cuba, Cyprus, Dominica, Dominican Republic, Federated States of Micronesia, Fiji, Grenada, Haiti, Iceland, Ireland, Jamaica, Japan, Kiribati, Madagascar, Maldives, Malta, Marshall Islands, Mauritius, New Zealand, PNG, Philippines, Sao Tome and Principe, Seychelles, Singapore, Solomon Is, Sri Lanka, St. Kitts-Nevis, St. Vincent & Grenadines, St. Lucia, Taiwan, Tonga, Trinidad & Tobago, UK, Vanuatu, and Samoa.

$X$  to  $Y$  is blocked since our model conditions on per capita GDP. If land area impacts democracy (other than through population) it seems likely to have a negative effect on that outcome, as larger areas presumably enhance coordination problems for the opposition and may be conducive to an autocratic, “imperial” style of rule. Indeed, various studies have shown a negative relationship between land area and democracy or democratization (e.g., Teorell 2010), a relationship that we also find – if population is included as an additional right-side variable in the model.

If our reasoning is correct, Land area and Arable land may serve as suitable instruments for population in a two-stage regression analysis. The results of the second stage, in which Polity2 is regressed against fitted values from the first analysis, are shown in model 2, Table 6. Coefficients and standard errors for the key variable, population, show a relationship that is somewhat stronger than our benchmark model, confirming our central finding. Of course, the causal effect must be interpreted as LATE rather than ATE; they indicate the causal effect for those countries whose population is determined by land area and arable land, not for others (Angrist, Pischke 2009).

### III. Discussion

Our thesis is that polities with larger populations are more democratic, according to the Schumpeterian conception of democracy. That is, they are more likely to regulate access to power through multi-party competitive elections and to set constitutional constraints on the exercise of power. This is so, we argued, because a larger population places a series of constraints on the ability of leaders to monopolize power.

In the empirical portion of the paper we have shown that the posited relationship between population and democracy holds in crossnational tests with a wide variety of specifications, samples, estimators, and outcome measures, including several quasi-experimental designs. Again, we want to emphasize that the purpose of these empirical exercises is not to estimate a precise causal effect but rather to indicate the plausibility of the main hypothesis.

If we are correct, the classical narrative requires some revision. That is, size impacts the quality of democracy differently along different dimensions. Specifically, increasing the size of a polity may have negative consequences for participation, feelings of efficacy, and perhaps for other dimensions of democracy, as the classical synthesis asserts (and many contemporary studies affirm). At the same time, increasing the size of a polity may have positive consequences for electoral/liberal aspects of democracy, at least in the modern era.

Democracy is not a single empirically and theoretically coherent concept (Coppedge, Gerring et al. 2012) so it stands to reason that the same causal factor might have divergent causal effects on different aspects of democracy. By implication, contemporary movements for greater amalgamation across polities (e.g., the European Union), or for division or devolution within polities, may have divergent causal effects – strengthening democracy in some respects and weakening it in other respects. We regard this as an important topic for future investigation.

Another topic that bears further study is the relationship between size and democracy at sub-national levels (i.e., across districts, regions, or municipalities of a nation-state) and within organizations that perform some political functions even though they do not presume to exercise sovereign or semisovereign rights over a territory (i.e., political parties, interest groups, trade associations, labor unions, fraternal and sororal organizations, churches, and firms). Conceivably, the relationship between membership size, on the one hand, and Schumpeterian democracy, on the other, is a wide-ranging sociological phenomenon, a hypothesis that we address in a series of

companion studies (Gerring, Zarecki 2012; Gerring, Teorell, Zarecki 2012).

## IV. References

- Abadie, Alberto, David Drukker, Jane Leber Herr, and Guido W. Imbens. 2001. "Implementing Matching Estimators for Average Treatment Effects in Stata." *The Stata Journal* 1:1, 1-18.
- Acemoglu, Daron, Simon Johnson, James A. Robinson, and Pierre Yared. 2008. "Income and Democracy." *American Economic Review* 98, 808-842.
- Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2002. "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution." *Quarterly Journal of Economics* 117, 1231-94.
- Alesina, Alberto, and Eliana La Ferrara. 2000. "Participation in Heterogeneous Communities." *Quarterly Journal of Economics* 115, 847-904.
- Alesina, Alberto, and Enrico Spolaore. 2003. *The Size of Nations*. MIT Press.
- Almond, Gabriel. 1956. "Comparative Political Systems." *Journal of Politics* 18, 391-409.
- Alvarez, Michael, Jose A. Cheibub, Fernando Limongi, and Adam Przeworski. 1996. "Classifying Political Regimes." *Studies in Comparative International Development* 31:2, 3-36.
- Anckar, Carsten. 2008. "Size, Islandness, and Democracy: A Global Comparison." *International Political Science Review* 29, 440-441.
- Anckar, Dag. 2002. "Why are Small Island States Democracies?" *Round Table* 365, 375-390.
- Anckar, Dag. 2004. "Direct Democracy in Microstates and Small Island States." *World Development* 32:2, 379-390.
- Anckar, Dag, and Carsten Anckar. 1995. "Size, Insularity and Democracy." *Scandinavian Political Studies* 18:4, 211-229.
- Angrist, Joshua D., and Jorn-Steffen Pischke. 2009. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton: Princeton University Press.
- Arellano, Manuel, and Stephen Bond. 1991. "Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations." *Review of Economic Studies* 58:2 (April) 277-297.
- Aumann, Robert J. 1964. "Markets with a Continuum of Traders." *Econometrica* 32:1-2 (January-April) 39-50.
- Barro, Robert J. 1999. "Determinants of Democracy." *Journal of Political Economy* 107:6, part II (December), S158-S183.
- Beck, Nathaniel, and Jonathan Katz. 1995. "What to Do (and Not to Do) with Time-Series Cross-Section Data." *American Political Science Review* 89:3 (September), 634-647.
- Beer, Caroline. 2009. "Democracy and Gender Equality." *Studies in Comparative International Development* 44, 21-227.
- Black, Gordon S. 1974. "Conflict in the Community: A Theory of the Effects of Community Size." *American Political Science Review* 68 (September), 1245-1261.
- Carneiro, Robert L. 1970. "A Theory of the Origin of the State." *Science* 169, 733-38.
- Cheibub, Jose Antonio, Jennifer Gandhi, and James Raymond Vreeland. 2010. "Democracy and Dictatorship Revisited." *Public Choice* 143:1-2, 67-101.
- Clague, Christopher, Suzanne Gleason, and Stephen Knack. 2001. "Determinants of Lasting Democracy in Poor Countries: Culture, Development, and Institutions." *The Annals of the American Academy of Political and Social Science* 773, 16-41.
- Colomer, Josep Maria. 2007. *Great Empires, Small Nations: The Uncertain Future of the Sovereign State*. London: Routledge.
- Coppedge, Michael, Angel Alvarez, and Claudia Maldonado. 2008. "Two Persistent Dimensions of Democracy: Contestation and Inclusiveness." *Journal of Politics* 70:3 (July), 335-350.

- Coppedge, Michael, John Gerring, and Staffan Lindberg. 2012. "Varieties of Democracy (V-Dem)." Unpublished project description. [v-dem.net]
- Coppedge, Michael, and John Gerring, et al. 2011. "Conceptualizing and Measuring Democracy: A New Approach." *Perspectives on Politics* 9:1 (June), 247-267.
- Coser, Lewis. 1956. *The Functions of Social Conflict*. New York: The Free Press.
- Costa, Dora L., and Matthew E. Kahn. 2003. "Civic Engagement and Community Heterogeneity: An Economist's Perspective." *Perspectives on Politics* 1:1 (March), 103-111.
- Dahl, Robert A. 1971. *Polyarchy: Participation and Opposition*. New Haven: Yale University Press.
- Dahl, Robert A., and Edward Tufte. 1973. *Size and Democracy*. Stanford: Stanford University Press.
- Diamond, Larry, and Svetlana Tsalik. 1999. "Size and Democracy: The Case for Decentralization." In Larry Diamond, ed. *Developing Democracy: Towards Consolidation* (Baltimore: Johns Hopkins University Press), 117-160.
- Dommen, E. 1980. "Some Distinguishing Characteristics of Island States." *World Development* 8:12, 931-943.
- Elwert, Felix, and Christopher Winship. 2011. "Endogenous Selection Bias." Unpublished manuscript, Department of Sociology, University of Wisconsin-Madison.
- Epstein, David L., Robert Bates, Jack Goldstone, Ida Kristensen, and Sharyn O'Halloran. 2006. "Democratic Transitions." *American Journal of Political Science* 50:3 (July) 551-69.
- Faris, R. 1999. "Unto Themselves: Insularity and Democracy." Unpublished MA thesis. University of North Carolina, Chapel Hill.
- Farrugia, Charles. 1993. "The Special Working Environment of Senior Administrators in Small States." *World Development* 21:2, 221-226.
- Gassebner, Martin, Michael J. Lamla, and James Raymond Vreeland. 2009. "Extreme Bounds of Democracy." KOF Working Paper #204.
- Gerring, John, and Dominic Zarecki. 2012. "Size and Democracy: A Universal Law?" Unpublished manuscript, Department of Political Science, Boston University.
- Gerring, John, Jan Teorell, and Dominic Zarecki. 2012. "Scaling Up: Demographics and Schumpeterian Democracy at Subnational Levels." Unpublished manuscript, Department of Political Science, Boston University.
- Gerring, John, Strom C. Thacker, and Rodrigo Alfaro. 2012. "Democracy and Human Development." *Journal of Politics* 74:1 (January) 1-17.
- Goemans, Hein E., Kristian Skrede Gleditsch, and Giacomo Chiozza. 2009. "Introducing Archigos: A Dataset of Political Leaders." *Journal of Peace Research* 46:2, 269-283.
- Goldstone, Jack A. 1993. *Revolution and Rebellion in the Early Modern World*. Berkeley: University of California Press.
- Green, Elliott. 2012. "On the Size and Shape of African States." *International Studies Quarterly* (forthcoming).
- Hadenius, Axel. 1992. *Democracy and Development*. Cambridge: Cambridge University Press.
- Hirsch, Werner Z. 1959. "Expenditure Implications of Metropolitan Growth and Consolidation." *Review of Economics and Statistics* 41: 232-41.
- Hiscox, Michael J., and David A. Lake. 2001. "Democracy and the Size of States." Unpublished manuscript. Department of Government, Harvard University.
- Holland, Paul W. 1986. "Statistics and Causal Inference." *Journal of the American Statistical Association* 81:396 (December) 945-60.
- Knack, Stephen, and Omar Azfar. 2003. "Trade Intensity, Country Size, and Corruption." *Economics of Governance* 4, 1-18.
- Laymeyers, J. 2006. "Population Statistics: Historical Demography of All Countries, Their Divisions and Towns." <http://www.populstat.info>.

- Lassen, David Dreyer, and Soren Serritzlew. 2011. "Jurisdiction Size and Local Democracy: Evidence on Internal Political Efficacy from large-scale Municipal Reform." *American Political Science Review* 105:2 (May), 238-258.
- Lockhart, Douglas G., David Drakakis-Smith, and John Schembri (eds). 1993. *The Development Process in Small Island States*. London: Routledge.
- Lu, Bo, Elaine Zanutto, Robert Hornik, and Paul R. Rosenbaum. 2001. "Matching with Doses in an Observational Study of a Media Campaign against Drug Abuse." *Journal of the American Statistical Association* 96:456 (December) 1245-53.
- Maddison, Angus. 2010. "Statistics on World Population, GDP and Per Capita GDP, 1-2008 AD." Downloaded from [www.ggdc.net/MADDISON/oriindex.htm](http://www.ggdc.net/MADDISON/oriindex.htm)
- Mann, Thomas, and Raymond Wolfinger. 1980. "Candidates and Parties in Congressional Elections." *American Political Science Review* 74, 617-632.
- Marshall, Monty G., Ted Robert Gurr, and Keith Jagers. 2010. "Polity IV Project: Political Regime Characteristics and Transitions, 1800-2009. Dataset Users' Manual." Center for Systemic Peace.
- Newey, Whitney K., and Kenneth D. West. 1987. "A Simple, Positive Semi-Definite, Heteroskedasticity and Autocorrelation Consistent Covariance Matrix." *Econometrica* 55:3 (May), 703-08.
- Oliver, J. Eric. 2000. "City Size and Civic Involvement in Metropolitan America." *American Political Science Review* 94:2 (June) 361-73.
- Olsson, Ola. 2003. "Geography and Institutions: A Review of Plausible and Implausible Linkages." Working Papers in Economics No. 106.
- Olsson, Ola, and Gustav Hansson. 2011. "Country Size and the Rule of Law: Resuscitating Montesquieu." *European Economic Review* 55:5, 613-29.
- Ott, Dana. 2000. *Small is Democratic: An Examination of State Size and Democratic Development*. New York: Garland.
- Pitkin, Hanna Fenichel. 1967. *The Concept of Representation*. Berkeley: University of California Press.
- Przeworski, Adam, Michael Alvarez, Jose Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development: Political Institutions and Material Well-Being in the World, 1950-1990*. Cambridge: Cambridge University Press.
- Remmer, Karen L. 2010. "Political Scale and Electoral Turnout: Evidence From the Less Industrialized World." *Comparative Political Studies* 43:3, 275-303.
- Rogowski, Ronald. 1998. "Democracy, Capital, Skill, and Country Size: Effects of Asset Mobility and Regime Monopoly on the Odds of Democratic Rule." In R.W. Davis, ed. *The Origins of Modern Freedom in the West* (Stanford: Stanford University Press, 1995), 48-69.
- Rose, Andrew K. 2006. "Size Really Doesn't Matter: In Search of a National Scale Effect." *Journal of Japanese and International Economies* 20, 482-507.
- Ross, Michael L. 2001. "Does Oil Hinder Democracy?" *World Politics* 53 (April), 325-361.
- Ross, Michael L. 2006. "Is Democracy Good for the Poor?" *American Journal of Political Science* 50:4 (October) 860-74.
- Royle, Stephen A. 2001. *A Geography of Islands: Small Island Insularity*. London: Routledge.
- Rubin, Donald. 2005. "Causal Inference Using Potential Outcomes: Design, Modeling, Decisions." *Journal of the American Statistical Association* 100, 322-31.
- Simmel, Georg. 1955. *Conflict and the Web of Group Affiliations*, trans. Reinhard Bendix and Kurt Wolff. Gencoe, IL: The Free Press.
- Srebrnik, Henry. 2004. "Small Island Nations and Democratic Values." *World Development* 32, 329-341.
- Stasavage, David. 2010. "When Distance Mattered: Geographic Scale and the Development of European Representative Assemblies." *American Political Science Review* 104:4 (November) 625-643.

- Taagepera, Rein. 1972. "The Size of National Assemblies." *Social Science Research* 1, 385–401.
- Teorell, Jan. 2010. *Determinants of Democratization: Explaining Regime Change in the World, 1972-2006*. Cambridge: Cambridge University Press.
- Tiebout, Charles M. 1956. "A Pure Theory of Local Government Expenditure." *Journal of Political Economy* 64, 416-424.
- Vanhanen, Tatu. 2000. "A New Dataset for Measuring Democracy, 1810-1998." *Journal of Peace Research* 37, 251-265.
- Weldon, Steven. 2006. "Downsize My Polity? The Impact of Size on Party Membership and Member Activism." *Party Politics* 12:4, 467-481.
- White, Halbert. 1980. "A Heteroskedasticity-Consistent Covariance Matrix and a Direct Test for Heteroskedasticity." *Econometrica* 48, 817-838.
- Wittman, Donald. 1991. "Nations and States: Mergers and Acquisitions; Dissolution and Divorce." *American Economic Review* 81:2, 126-129.
- Wittman, Donald. 2000. "The Wealth and Size of Nations." *Journal of Conflict Resolution* 44:6, 868-84.

*Table 1:*  
**Extant Crossnational Studies**

<b>Study</b>	<b>Outcomes</b>	<b>Research design</b>	<b>Period</b>	<b>Finding</b>	<b>Focus</b>
Acemoglu et al. 2008	PR	TSCS: OLS w/ fixed effects, GMM	1960-2000	0	No
Barro 1999	PR, CL	TSCS: SUR w/ lagged Y at 5-year intervals	1972-1995	0	No
Gassebner et al. 2009	DD (transitions)	TSCS: Extreme bounds	Varying	0	No
Hadenius 1992	Hadenius index	TSCS: OLS	1988	-	No
Ott 2000	PR, CL, et al.	CS: Cross-tabs	1973-1995	-	Yes
Rose 2006	PR, CL	Various	1960-2000	0	No
Teorell 2010	PR, CL, Polity2	TSCS: OLS w/ lagged DV	1972-2006	0	No

*Units of analysis* = countries or country-years. *Finding* = negative (-), positive (+), null (0). *Focus* on population = Yes/No. *CS* = cross-section. *TSCS* = time-series cross-section. *SUR* = seemingly unrelated regression. *GMM* = generalized method of moments. *DD* = (Alvarez et al. 1996; Cheibub et al. 2010). *PR* = Political Rights (Freedom House). *CL* = Civil Liberties (Freedom House).

*Table 2:*  
**Testing Alternate Outcomes, Samples, and Specifications**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
<i>Outcome</i>	<i>Polity2</i> (PolityIV)	<i>Polity2</i> (PolityIV)	<i>Polity2</i> (PolityIV)	<i>XCONST</i> (PolityIV)	<i>POLCOMP</i> (PolityIV)	<i>Pol Rights</i> (FH)	<i>Competitive</i> (Vanhanen)	<i>Turnover</i> (Archigos)	<i>Contestation</i> (Coppedge)
<i>Scale</i>	<i>Continuous</i>	<i>Trichotomous</i>	<i>Dichotomous</i>	<i>Continuous</i>	<i>Continuous</i>	<i>Continuous</i>	<i>Continuous</i>	<i>Dichotomous</i>	<i>Continuous</i>
<i>Estimator</i>	OLS, NW	Ordered logit	Logit (MLE)	OLS, NW	OLS, NW	OLS, NW	Tobit (RE)	Logit (MLE)	OLS, NW
<i>BENCHMARK HISTORICAL</i>									
<b>Population (ln)</b>	2.191*** [0.272]	0.109*** [0.015]	0.184*** [0.019]	3.560*** [0.337]	1.227*** [0.353]		3.771*** [0.756]	0.117*** [0.023]	2.169*** [0.246]
<i>Observations</i>	10,222	10,222	10,222	9,154	9,117		9,638	8,968	5,824
<i>Countries</i>	181	181	181	159	159		177	168	157
<i>Years</i>	1820-2002	1820-2002	1823-2001	1820-2003	1820-2003		1820-1999	1868-1999	1949-1999
<i>R2 (pseudo)</i>	0.460	(0.256)	(0.372)	0.451	0.408			(0.113)	0.492
<i>Log Likelihood</i>							-30,340		
<i>BENCHMARK CONTEMPORARY</i>									
<b>Population (ln)</b>	2.232*** [0.314]	0.164*** [0.017]	0.179*** [0.020]	1.963*** [0.394]	1.284*** [0.415]	0.879*** [0.333]	1.746 [1.133]	0.080*** [0.026]	1.637*** [0.251]
<b>Impact</b>	10.250	0.150	0.166	9.091	5.872	4.112	7.165	0.019	7.544
<i>Observations</i>	6,742	6,742	6,742	5,752	5,752	5,252	5,809	6,015	5,179
<i>Countries</i>	183	183	183	159	159	182	177	166	158
<i>Years</i>	1960-2002	1960-2002	1960-2002	1960-2002	1960-2002	1971-2003	1960-1999	1960-2000	1960-1999
<i>R2 (pseudo)</i>	0.459	(0.264)	(0.377)	0.453	0.458	0.506		(0.098)	0.490
<i>Log Likelihood</i>							-17,195		
<i>MAXIMAL</i>									
<b>Population (ln)</b>	0.747*** [0.282]	0.011 [0.019]	0.007 [0.024]	1.529*** [0.356]	-0.169 [0.395]	1.059*** [0.348]	2.382*** [0.740]	0.114*** [0.028]	1.531*** [0.246]
<i>Observations</i>	8,875	8,875	8,875	8,049	8,013	4,250	8,461	7,819	5,306
<i>Countries</i>	147	147	147	128	128	146	144	136	128
<i>Years</i>	1820-2000	1820-2000	1820-2000	1820-2001	1820-2001	1971-2001	1960-1999	1960-2003	1960-1999
<i>R2 (pseudo)</i>	0.517	(0.305)	(0.437)	0.515	0.470	0.611		(0.132)	0.584
<i>Log Likelihood</i>							-27,519		

Outcomes forward-lagged one period. Continuous outcomes re-scaled from 0 to 100 (100=most democratic). *Benchmark covariates* = Diffusion, GDP per capita, Urban population, Island, Protestant, Muslim, annual dummies. *Maximal covariates* = Benchmark + Landlock, Latitude (ln), English legal origin, European language, Ethnic fractionalization, Religious fractionalization, Catholic, Population density, Regional dummies (West Europe, Latin America, Middle East, Africa). *NW* = Newey-West standard errors. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests).

*Table 3:*  
**Alternate Regression Models**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
<i>Sample</i>	Natural	Natural	- India, US	MI	Natural	Natural	Natural	Natural	Natural	Natural	Natural
<i>Panel</i>	Annual	Annual	Annual	Annual	10-year	No	Annual	Annual	Annual	Annual	Annual
<i>Lag periods</i>	1	1	1	1	1	1	40	1	1	1	1
<i>Estimator</i>	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE	OLS NWSE
<b>Population (ln)</b>	2.191*** [0.272]	0.548*** [0.208]	1.253*** [0.273]	0.494*** [0.167]	2.092*** [0.719]	1.500** [0.590]	1.163** [0.519]			0.164*** [0.055]	2.004*** [0.304]
<b>Population (ln), 1960</b>								3.062*** [0.323]			
<b>Population (medium)</b>									0.291 [0.954]		
<b>Population (large)</b>									4.539*** [0.963]		
Diffusion	26.976*** [2.601]	52.178*** [2.856]	25.618*** [2.510]	43.440*** [2.256]	28.433*** [6.578]	5.569 [3.918]	13.393 [8.658]	25.498*** [2.205]	26.670*** [2.646]	0.768* [0.440]	27.033*** [2.601]
GDP per cap (ln)	15.803*** [0.532]		15.852*** [0.546]	10.877*** [0.364]	16.142*** [1.442]	5.421*** [0.991]	21.714*** [1.541]	11.673*** [0.725]	15.388*** [0.543]	0.723*** [0.138]	15.710*** [0.533]
Urban	-26.254*** [2.802]		-23.213*** [2.854]	-9.057*** [2.464]	-26.547*** [7.371]	-15.007*** [5.464]	-16.317* [9.310]	-0.029 [0.031]	-21.495*** [2.795]	-0.854 [0.583]	-26.032*** [2.797]
Island	14.489*** [1.037]		14.518*** [1.033]	13.145*** [0.826]	14.916*** [2.760]	3.399 [2.607]	7.231*** [1.835]	19.540*** [1.403]	12.476*** [1.042]	0.583*** [0.217]	14.125*** [1.082]
Protestant	0.219*** [0.013]		0.200*** [0.013]	0.298*** [0.011]	0.219*** [0.036]	-0.018 [0.043]	0.205*** [0.021]	0.214*** [0.018]	0.221*** [0.013]	0.010*** [0.003]	0.215*** [0.014]
Muslim	-0.217*** [0.013]		-0.214*** [0.013]	-0.218*** [0.010]	-0.209*** [0.033]	-0.726*** [0.028]	-0.232*** [0.026]	-0.232*** [0.015]	-0.223*** [0.013]	-0.015*** [0.003]	-0.218*** [0.013]
Capabilities											17.098* [9.299]
Y (lagged)											4.752*** [0.020]
Year dummies	X	X	X	X	X		X	X	X	X	X
<i>Observations</i>	10222	17695	9985	14200	1049	180	4416	5699	10222	10221	10222
<i>Countries</i>	181	194	179	213	181	180	109	175	181	181	181
<i>Years</i>	1820- 2002	1815- 2002	1820- 2002	1815- 2004	1820- 2000	2000	1959- 2002	1960- 2002	1820- 2001	1820- 2001	1820- 2002
R2	0.460	0.205	0.462	0.499	0.490	0.849	0.421	0.463	0.455	0.948	0.460

MI = multiple-imputation sample. OLS = ordinary least squares. NW = Newey-West. SE = standard errors. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests). All outcomes re-scaled from 0-100.

*Table 4:*  
**Regime-change Models**

	(1)	(2)	(3)	(4)	(5)
<i>Polity2 coding</i>	(0-100) $Y_t - Y_{t-1}$	(0-100) $Y_t - Y_{t-1}$	(0-100) $Y_t - Y_{t-1}$	(0/1) 1=Demo	(0/1) 1=nonDemo
<i>Estimator</i>	OLS NWSE	OLS NWSE	GMM	Weibull Hazard, Cluster SE	Weibull Hazard, Cluster SE
<b>Population (ln)</b>	0.164*** [0.055]	0.218*** [0.069]	3.083*** [1.044]	0.063* [0.038]	-0.050* [0.029]
Diffusion	0.723*** [0.138]	0.645*** [0.161]	-1.528 [2.044]	0.166 [0.159]	-1.457*** [0.417]
GDP per cap (ln)	-0.854 [0.583]	-0.926 [0.717]	-2.337*** [0.784]	0.482*** [0.052]	-0.419*** [0.065]
Urban	0.768* [0.440]	1.371*** [0.505]	8.634** [3.432]	-0.958*** [0.293]	0.499 [0.332]
Island	0.583*** [0.217]	0.822*** [0.301]		0.388*** [0.110]	-0.369** [0.171]
Protestant	0.010*** [0.003]	0.003 [0.004]		0.004*** [0.001]	-0.005* [0.003]
Muslim	-0.015*** [0.003]	-0.017*** [0.004]		-0.014*** [0.004]	0.003*** [0.001]
Y (lagged)	-0.248*** [0.020]	-0.315*** [0.026]	0.871*** [0.007]		
Decade dummies				X	X
Year dummies	X	X	X		
<i>Failures/Transitions</i>				3825/179	6396/109
<i>Observations</i>	10,221	8,376	10025	10229	10229
<i>Countries</i>	181	172	181	181	181
<i>Years</i>	1820-2001	1820-2001	1820-2001	1820-2002	1820-2002
R2	0.051	0.063			
<i>Wald chi2</i>			23,955	836	667
<i>Log pseudolikelihood</i>				15,451	23,562

*Panel:* annual. All right-side variables lagged one period. *NW* = Newey-West *SE* = standard errors. *GMM* = generalized method of moments (Arellano Bond). \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$  (two-tailed tests). Model 2 excludes observations in which Polity2 = maximum value.

*Table 5:*  
**Matching Estimators**

	<b>(1)</b>	<b>(2)</b>
<b><i>SATE</i></b>	2.176** (1.046)	4.063*** (1.020)
<i>Exact matching</i>	Year, Island, Muslim, Protestant	Year, Island, Muslim, Protestant
<i>% matched</i>	97	97
<i>Nearest-neighbor matching</i>	Benchmark covariates	Maximal covariates
<i>Countries</i>	183	178
<i>Observations</i>	6742	6253

*Period:* 1960-2004. *Outcome:* Polity2, re-scaled from 0 to 100 (100=most democratic). *Treatment* = 1 for a country (in all years) if population for that country in 1960 is above the median. *Benchmark covariates* = Diffusion, GDP per capita (WDI), Urban population (WDI). *Maximal covariates* = Benchmark + Landlock, Latitude (ln), English legal origin, European language, Ethnic fractionalization, Religious fractionalization, Catholic, Population density, Regional dummies (West Europe, Latin America, Middle East, Africa). \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

*Table 6:*  
**Quasi-Experimental Tests**

	(1)	(2a)	(2b)
<i>Sample</i>	Islands	Entire	Entire
<i>Estimator</i>	OLS NW SE	IV (1st stage)	IV (2d stage)
<b>Population (ln)</b>	1.737*** [0.550]		3.122*** [0.252]
Diffusion	8.046** [3.269]	-0.137** [0.056]	23.673*** [1.702]
GDP per cap (ln)	23.224*** [1.478]	0.038** [0.019]	12.572*** [0.580]
Urban	-46.921*** [4.295]	0.003*** [0.001]	-0.057** [0.024]
Island		0.231*** [0.036]	19.710*** [1.032]
Protestant	0.090*** [0.027]	-0.008*** [0.001]	0.204*** [0.016]
Muslim	-0.320*** [0.073]	-0.002*** [0.001]	-0.248*** [0.011]
Year dummies	X	X	X
Land area		0.706*** [0.006]	
Arable land		0.057*** [0.001]	
<i>Observations</i>	1703		6225
<i>Countries</i>	42		182
<i>Years</i>	1820-2001		1961-2001
R2	0.466	0.757	0.457

*Outcome:* Polity2, re-scaled from 0 to 100 (100=most democratic). Outcomes forward-lagged one period. Panel: annual. *OLS* = ordinary least squares. *NW* = Newey-West. *SE* = standard errors. *IV* = instrumental variable analysis. *Instruments:* Land area and Arable land. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 (two-tailed tests).

## ***APPENDIX A***

*Table A1:*  
**Variable Definitions**

<p><b>Africa.</b> Dummy (coding by authors). <i>Africa</i></p> <p><b>Capabilities.</b> Capabilities index, combining iron/steel production, energy use, military expenditures, military personnel, and total and urban population (Correlates of War). <i>capability_cow</i></p> <p><b>Catholic.</b> Percent Catholic (CIA WorldFactbook on-line). <i>Catholic</i></p> <p><b>Civil liberties.</b> Index measuring the legal and practical protections of human rights (Freedom House). <i>Civil_liberty_FH_neg</i></p> <p><b>Competitiveness.</b> 100 - votes won by the largest party in presidential or parliamentary elections (or both, averaged) as % of total votes cast. Whether one or both type of elections is included depends on the relative power of these institutions. If data on the distribution of votes are not available, the value of this variable is calculated on the basis of the distribution of seats in parliament. If executive and legislative positions are not filled by elections, competitiveness is scored as zero. Referred to as “competition” in the original dataset (Vanhanen 2000). <i>Competition_Vanhanen</i></p> <p><b>Contestation.</b> A scale based on expert-coded factors, it measures the contestation dimension of polyarchy outlined by Dahl (1971) (Coppedge et al. 2008).</p> <p><b>Diffusion.</b> The Polity2 scores of all other countries in a given year, weighted by the inverse of the distance to a country. <i>Polity4_imp_geo</i></p> <p><b>English legal origin.</b> English legal origin (La Porta et al 1999). <i>English_legal_origin</i></p> <p><b>Ethnolinguistic fract.</b> Ethnolinguistic fractionalization: 1 - summation of the square of each ethno-linguistic group’s proportion (Alesina et al 2003). <i>Ethnolinguistic_fract_AVELF</i></p> <p><b>European language.</b> Percent speaking a European language (CIA WorldFactbook on-line). <i>European_language</i></p> <p><b>GDP per cap (ln).</b> GDP per capita (Maddison 2008), with missing data imputed from World Bank (2007). Transformed by natural logarithm. <i>GDPpc_imputed_Mad_ln</i></p> <p><b>Island.</b> Dummy (coding by authors). <i>Island</i></p> <p><b>Land area (ln).</b> Land area, square kilometers (World Bank 2007), extended backward through time. <i>Land_Area_WDI_07_epolate_ln</i></p> <p><b>Land use.</b> Percent of state’s territory that is arable land (World Bank 2007). <i>Land_use_arable_percent_WDI_05</i></p> <p><b>Landlock.</b> 1 if country is landlocked, 0 otherwise (Acemoglu, Johnson, Robinson 2002). <i>Landlock</i></p> <p><b>Latin America.</b> Dummy (coding by authors). <i>Latin.America</i></p> <p><b>Latitude (ln).</b> Distance from the equator, transformed by natural logarithm. <i>Latitude_ln</i></p> <p><b>Middle East.</b> Dummy. Coding by authors. <i>MiddleEast</i></p> <p><b>Muslim.</b> Percent Muslim (CIA WorldFactbook on-line). <i>Muslim</i></p> <p><b>POLCOMP.</b> Measures the degree of regulation and competition participants face in the political arena (Polity IV). <i>Pol_Comp_POLITY</i></p> <p><b>Political rights.</b> Political Rights Index (Freedom House). <i>Pol_rights_FH_neg</i></p> <p><b>Polity2.</b> Polity2 variable (Polity IV), with additional data imputed as described in the text. <i>Polity4_imp_F</i></p> <p><b>Polity2, dichotomous.</b> 0 if Polity2 &lt;5, 1 if Polity2 &gt;=5, based on imputed Polity2 variable. <i>Polity4_imp_dich5_F</i></p> <p><b>Polity2, trichotomous.</b> 0 if Polity2 &lt;-5, 1 if Polity2 &gt;=-5 &amp; &lt;5, 2 if Polity2 &gt;=5, based on imputed Polity2 variable. <i>Polity4_imp_trich_F</i></p> <p><b>Population density.</b> Population density, persons per square kilometer (Banks 1994). <i>Pop_density_Banks</i></p> <p><b>Population (ln).</b> Population primarily from Lahmeyers (2006); supplemented by World Bank (2007) and other sources. Data missing <i>in between</i> extant data points for a single country prior to 1960 is interpolated in order to provide a</p>
--

continuous time-series. The majority of the interpolation is based on data points a decade or less apart. Out of 2827 gaps, only 48 are over two decades long, 106 are between one and two decades long, and 444 of the missing time periods are single years. The sample of available observations is thereby increased from 23344 to 36014. All such interpolations concern eras prior to 1960 and thus do not affect tests conducted with contemporary samples. Transformed by the natural logarithm. *pop\_ln*

**Protestant.** Percent Protestant (CIA WorldFactbook on-line). *Protestant*

**Religious fract.** Religious fractionalization: 1 – summation of the square of each religious group's proportion (Alesina et al. 2003). *Religious\_fractionaliz\_Alesina*

**Turnover.** Top political leaders enter and exit in a prescribed manner (Goemans et al. 2009). *Regular\_Archigos*

**Urban population [historical].** Urban population, percent of total (CoW). *pop\_cow\_urban*

**Urban population [contemporary].** Urban population, percent of total (World Bank 2007). *Urban\_Pop\_WDI\_07*

**Western Europe.** Dummy (coding by authors). *WestEurope*

**XCONST.** Measures the degree of constraint on the chief executive with three codings: "(1) Unlimited authority, (2) Intermediate category, and (3) Slight to moderate limitations" (Marshall, Jaggers 2007: 15). *Executive\_Constraints\_POLITY*

*Table A2:*  
**Descriptive Statistics**

<b>Variable</b>	<b>Obs</b>	<b>Mean</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
Africa	10222	0.20	0.40	0	1
Capabilities	10222	0.01	0.04	0.00	0.38
Catholic	10222	37.49	38.55	0.00	97.30
Competition (Polity IV)	9116	46.33	40.11	0.00	100.00
Competitiveness (Vanhanen)	9635	26.70	25.46	0.00	70.00
Contestation (Coppedge et al.)	5822	52.77	26.37	0.00	100.00
Diffusion	10222	-0.02	0.19	-1.06	2.02
English legal origin	10222	0.26	0.44	0.00	1.00
Ethno-linguistic fract	10222	0.28	0.26	0.00	1.00
European language	10222	0.33	0.42	0.00	1.00
Executive constraints (Polity)	9153	50.75	40.30	0.00	100.00
GDP per cap (ln)	10222	7.78	0.95	5.31	10.69
Island	10222	0.17	0.37	0	1
Land area (ln)	10164	12.19	2.05	5.19	16.05
Land use	5882	14.24	13.69	0.04	70.62
Landlock	10222	0.14	0.35	0	1
Latin America	10222	0.17	0.38	0	1
Latitude (ln)	10180	-1.40	0.89	-4.50	-0.34
Middle East	10212	0.10	0.30	0	1
Muslim (%)	10222	18.54	33.58	0.00	99.90
Political rights (FH)	4829	49.98	37.41	0.00	100.00
Polity2	10222	50.88	36.60	0.00	100.00
Polity2, binary	10222	0.37	0.48	0	1
Polity2, trichotomous	10222	0.99	0.84	0	2
Population density	5514	3157	10398	17	174225
Population (huge)	10222	0.33	0.47	0	1
Population (large)	10222	0.33	0.47	0	1
Population (small)	10222	0.33	0.47	0	1
Population (ln)	10222	15.65	1.60	10.57	20.96
Protestant (%)	10222	16.51	27.85	0.00	98.00
Religious fract	10216	0.40	0.24	0.00	0.86
Turnover (Archigos)	9029	0.14	0.34	0	1
Urban population (historical)	10222	0.17	0.16	0.00	1.00
Urban population (contemp)	6033	45.80	24.41	2.08	100
West Europe	10222	0.21	0.41	0	1

*Note:* Data limited to observations in the benchmark model.

*Table A3:*  
**Correlation Table of Outcome Measures**

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Polity2 continuous	1.000								
2. Polity2 trichotomous	0.968	1.000							
3. Polity2 dichotomous	0.934	0.914	1.000						
4. Executive constraints	0.956	0.911	0.900	1.000					
5. Competition	0.961	0.949	0.889	0.895	1.000				
6. Political rights	0.911	0.894	0.869	0.880	0.902	1.000			
7. Competitiveness	0.900	0.876	0.836	0.866	0.877	0.867	1.000		
8. Turnover	0.309	0.297	0.306	0.316	0.293	0.291	0.308	1.000	
9. Contestation	0.923	0.893	0.881	0.904	0.900	0.945	0.868	0.295	1.000