A Complete Dataset of Political Regimes, 1800-2007

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Abstract

This paper updates and describes a widely used dataset on democracy. Covering 1800-2007 and 213 countries, it represents the most comprehensive dichotomous measure of democracy currently available. We argue that our measure's distinguishing features—a concrete, dichotomous coding and a long time-span—are of critical value to empirical work on democracy. Inspired by Robert Dahl, we define a country as democratic if it satisfies conditions for both contestation and participation. Specifically, democracies feature political leaders chosen through free and fair elections and satisfy a threshold value of suffrage. After comparing our coding to other popular measures, we illustrate how democracy's predictive factors have evolved since 1800. In particular, we show that economic modernization variables have steadily declined in their correlation with democracy over time.

1 Introduction

The worldwide spread of democracy over the past two centuries represents one of the great transformations in history and an enduring subject of interest for political science. Controversy

remains, however, over how democracy is best measured, which has been shown to matter for empirical conclusions (Bollen 1980; Bollen and Jackman 1989; Elkins 2000; Casper and Tufis 2003; Treier and Jackman 2008; Bogaards 2010; Cheibub et al. 2010). In the current paper, we present an original coding of democracy with a number of empirical advantages over previous measures. Several published studies have used previous versions of our measure (e.g., Boix 2003; Acemoglu et al. 2009; Persson and Tabellini 2009; Ansell and Samuels 2010; Haber and Menaldo 2011), but here the dataset is described and released for general public use for the first time.

Covering 1800-2007 and 213 countries (totaling 15,972 democracy observations), our coding represents the most comprehensive dichotomous measure of democracy currently available. In comparison, the Polity dataset (Marshall and Jaggers 2010), the most widely used measure of democracy, includes 189 countries for the years 1800-2009. Existing dichotomous measures of democracy, such as Alvarez et al. (1996), Golder (2005), and Cheibub et al. (2010), are limited to 1946 onward. In addition, we add a minimal suffrage requirement for democracy, which is omitted from Polity and these dichotomous measures but has important implications for historical work on democracy.

The two distinguishing features of our measure—its dichotomous nature and its coverage from 1800-2007—make it particularly useful for quantitative research on democracy. The links between democracy and various country characteristics—including average income, economic equality, religion, and colonial history—are among the most extensively explored topics in political science. However, what has been less studied in this literature is a consideration of how these relationships have changed across time. For instance, does the well-known correlation between average income and democracy vary by time period? Are the best predictors of democracy today different than what they were 50 or 100 years ago? Are there observable shifts surrounding the end of the Cold War and other global events?

Below, we use our historical data to begin to answer these questions. We show that the correlation between income and democracy fell sharply after World War II, but has held constant and significantly positive since. Economic equality, in contrast, has steadily declined in its correlation with democracy and is now only a marginally significant predictor. We then turn to a consideration of how the explanatory powers of sets of variables have changed over time. The most interesting finding is that the explanatory power of a set of five economic modernization variables has declined to the point that unchanging geographic variables are now better correlates of democracy across the world.

The following section overviews three of the major debates concerning the measurement of democracy and the positions we take on them. Since the appropriate measure of democracy depends in great part on the research question and design (Collier and Adcock 1999), we see our primary contribution as one of empirical utility. Section 3 describes our coding and several country examples. Section 4 contrasts our coding with the most popular dichotomous alternative (Cheibub et al. 2010, which extends Alvarez et al. 1996) and compares it numerically to several other common measures of democracy. Section 5 explores the time-varying correlation of our measure with several factors, such as average income, inequality, geography, and colonial history. Section 6 concludes.

2 Measures of Democracy

Political scientists have devised dozens of distinct measures of democracy and theorized in dozens of other articles on the proper measurement of democracy and the shortcomings of existing approaches. Further, the differences are not merely academic. Empirical results can depend on the specific measure of democracy used (Bollen 1980; Bollen and Jackman 1989; Elkins 2000; Casper and Tufis 2003; Treier and Jackman 2008; Bogaards 2010; Cheibub et al. 2010) and the time period covered (Boix 2003; Boix and Stokes 2003; Boix forthcoming).

TABLE 1 HERE

There exist at least three major debates over the measurement of democracy: its constituent components, the numerical form of the measure, and how different components are combined into a single measure. Table 1 summarizes the literatures on each debate. Works that offer their own measures of democracy are listed in bold. We now briefly overview each of these debates and the perspective we adopted in constructing our measure.

Components of Democracy

Scholars disagree over what political features are entailed by democracy. Schumpeter (1942/1950) famously defended a "minimal" definition of democracy, which only requires that political representatives compete over the people's vote. The dichotomous measure used in Przeworski et al. (2000) (described in Alvarez et al. 1996 and extended by Cheibub et al. 2010) similarly focuses exclusively on political contestation. Other authors counter that democracy necessitates a range of features to make political competition meaningful, such as high suffrage (Dahl 1971; Bollen 1980; Coppedge and Reinicke 1990; Paxton 2000; Munck and Verkuilen 2002), horizontal accountability (Gerring et al. 2009), civil liberties (Diamond et al. 1990; Freedom House 2010), social rights and equality (Giddens 1998; Gerring et al. 2009), and even anti-corruption laws (Welzel and Inglehart 2006; Freedom House 2010).

For our measure, we begin with Dahl's (1971) classification of democracy along the two dimensions of political contestation and participation. We define democracies as those countries (which Dahl calls "polyarchies") that meet high standards on both dimensions. For the participation dimension, we require a minimal level of suffrage. For the contestation dimension, we require that the decisions to govern the state are taken through voting procedures that are free and fair. In conceptualizing this, we hew closest to the minimal conception of democracy used in Przeworski et

al. (2000). Besides its clarity, a minimal definition of democracy offers an empirical advantage. By not bundling in additional elements of democratic practice, such as civil liberties, it allows researchers to empirically relate these elements to regime type. As a cautionary example, Vreeland (2008) posits that previous findings relating middle values of Polity to civil war onset were driven by the inclusion of political violence in the Polity index, leading him to recommend using a stripped-down version of Polity (called X-Polity) to predict civil war.

Numerical Form

A second choice in measuring democracy is the general numerical form of the measure. Scholars differ over whether democracy is properly conceived as dichotomous (Sartori 1987; Alvarez et al. 1996; Cheibub et al. 2010), polychotomous (Gasiorowski 1996; Collier and Levitsky 1997; Mainwaring et al. 2007),[1] continuous (Cutright 1963; Bollen and Jackman 1989; Elkins 2000), or multi-dimensional (Dahl 1971; Bollen and Paxton 2000; Altman and Pérez-Liñán 2002; Vanhanen 2005; Coppedge et al. 2008; Gerring 2008; Gerring et al. 2009; Miller 2010). Collier and Adcock (1999) instead argue that the appropriate measure of democracy is conditional on the goals and design of the research.

We prefer a dichotomous measure of democracy for both conceptual and empirical reasons. From a conceptual point of view, a dichotomous classification has at least two advantages. First, it provides a concreteness and transparency to the class of democracies by requiring a set of necessary, common characteristics: A democracy must meet clear standards for both contestation and suffrage. Unless a maximal score on each component is required, a continuous measure entails *no* necessary condition for democracy. Second, our conditions reflect the cumulative nature of political rights in establishing democratic rule. A country that allows the people to vote but ensures that elections are uncompetitive (and therefore policy-makers are not accountable) is non-democratic, as is a country

that allows meaningful electoral competition but limits suffrage to a small elite. It is only when free competition and wide suffrage are combined that a country can be democratic. Continuous measures that simply add together their underlying components ignore the degree to which distinct political features reinforce one another in spreading political power.

In a number of recent studies, authors create dichotomous (or polychotomous) measures of democracy using thresholds of a continuous measure. That practice, already criticized in Bogaards (2010) and Cheibub et al. (2010), ignores the fact that it is generally impossible to interpret a country's movement across a particular threshold in a substantive way. As Gleditsch and Ward (1997) point out, a given cumulative Polity score can result from dozens of distinct combinations of the underlying components. A move from, say, 5 to 6 on this scale has a similar number of possible sources. Moreover, the choice of a particular threshold is almost always arbitrary. Bogaards (2010) lists 10 distinct polychotomous categorizations of democracy based on Freedom House and 11 based on Polity which have been used in published research. None of the authors offer a concrete reason for the thresholds other than claiming they are intuitive or citing another study that uses the same threshold.[2]

By contrast, we rely on thresholds on our underlying components (such as our minimal suffrage rule), but these are based on concrete values which must all be satisfied to qualify as democratic. As we indicate later, we define as democratic a country that has competitive elections and has enfranchised a majority of the male population. The second condition (which is much less stringent than a threshold of full universal suffrage among both men and women) allows us to capture the considerable cross-country variation in political conditions before World War I.

In the spirit of Collier and Adcock (1999), it is worth specifying some of the advantages of a dichotomous measure for applied research. Although we do not claim that continuous measures are never appropriate for empirical work, they can present problems of inference. Consider a continuous

measure that varies from 0 to 1. Empirical tests typically interpret moves from 0 to 0.5 on this scale the same as moves from 0.5 to 1. Whether this is justified surely varies by the subject matter and design of the research.

As an illustration of this point, consider some of the most common applications of dichotomous democracy measures. First, there is a large literature comparing policies, economic outcomes, and conflict behavior between democracies and autocracies (e.g., Barro 1996; Mansfield and Snyder 2005; Ross 2006). Similarly, the large "democratic peace" literature theorizes that democratic dyads are less likely to experience war. In many cases, such comparisons are most valid using a dichotomous measure, as it saves researchers from assuming that outcomes vary as a smooth function of the level of democracy. For instance, if a dependent variable is found to vary significantly with the Polity score, the underlying reason is unclear: Is this because of the difference between democracy and autocracy, variation in autocratic institutions, or variation in the quality of democracy?

Second, several recent studies use a "democratic stock" variable (usually a discounted sum of past years of democracy) as an explanatory variable for outcomes like economic growth or democratic stability (Muller 1988; Gerring et al. 2005; Persson and Tabellini 2009). A dichotomous variable is conceptually superior as a basis for this, since weighted sums of a continuous measure inappropriately conflate consistent values at a middle level of democracy with a mixture of high and low values. The same consideration applies to studies that employ the percentage of democracies in the region or in the world to test for democratic diffusion (Starr and Lindborg 2003; Gleditsch and Ward 2006).

Lastly, although some cases of democratic development are gradual (e.g., Mexico, Taiwan, and Botswana), a dichotomous classification remains the most popular approach to capturing democratic transitions and breakdowns (Przeworski et al. 2000; Cheibub et al. 2010). Major results

in the transition literature, such as the finding that economic development relates to democratic stability more strongly than to democratization (Przeworski and Limongi 1997; Przeworski et al. 2000; Boix and Stokes 2003), are not easily replicable using a continuous measure of democracy.

Measurement

Finally, there is little agreement on how different components ought to be combined into a single democracy measure (Coppedge and Reinicke 1990; Bollen 1993; Gleditsch and Ward 1997; Munck and Verkuilen 2002; Treier and Jackman 2008; Pemstein et al. 2010). Presenters of continuous democracy scores rarely give clear-cut reasons for how components are aggregated (Coppedge and Reinicke 1990; Munck and Verkuilen 2002) or verify that the measures are consistently scaled across their range (Gleditsch and Ward 1997; Treier and Jackman 2008). Although the Polity democracy score (Marshall and Jaggers 2010) remains the most widely used, it has faced recent criticism over issues of aggregation, subjectivity, and scaling (Gleditsch and Ward 1997; Munck and Verkuilen 2002; Treier and Jackman 2008; Cheibub et al. 2010). To eliminate the biases of any single measure, several studies statistically combine multiple democracy measures into a single "latent" democracy score using factor analysis and similar methods (Bollen 1980; Bollen and Grandjean 1981; Coppedge et al. 2008; Treier and Jackman 2008; Miller 2010; Pemstein et al. 2010). By relying on necessary conditions, our dichotomous measure escapes the problems of scaling and aggregation common to continuous measures.

3 Our Coding

We define a country as democratic if it meets the following conditions for both contestation and participation:

Contestation

(1) The executive is directly or indirectly elected in popular elections and is responsible either directly to voters or to a legislature.

(2) The legislature (or the executive if elected directly) is chosen in free and fair elections.

Participation

(3) A majority of adult men has the right to vote.

To code country-years, we rely on a variety of sources, which change with the time period:

(1) To establish whether the executive is directly or indirectly responsible to the electorate, we have relied on the worldwide constitutional legislation compiled in Blaustein and Flanz (various years), as well as specific regional collections of constitutions, such as López Guerra and Aguiar de Luque (2001) for Latin America. After 1950, we also employ Alvarez et al. (1996).

(2) To determine the second condition, we define elections as free if voters are given multiple options on ballots[3] and as fair if electoral fraud is absent and incumbents do not abuse government power to effectively eliminate the chance of opposition victory through peaceful contestation. To operationalize these two criteria, we rely primarily, but not exclusively, on the concept of electoral turnover emphasized in Przeworski et al. (2000). We take any instance of electoral executive turnover to an opposition party as a strong indicator of free and fair elections. However, the presence of electoral turnover is neither necessary nor sufficient to fulfill condition (2). On the one hand, it is not a necessary condition because there are cases with no executive turnover, such as Sweden from 1933-76, that would qualify as democratic even before knowing the electoral outcome of 1976.

Similarly, we judge South Africa as democratic after 1994, whereas Cheibub et al. (2010) code it as dictatorial because the African National Union has yet to experience electoral defeat.[4] Accordingly, we checked the history of those cases with no electoral turnover for a sufficiently long period of time (over two electoral terms) to examine whether internal coups, external interventions, abuses of state power, or reports of fraud could explain the prolonged control of the executive by the same party. If there were none and we observe contested elections, we code the period as having free and fair elections. If a peaceful governmental turnover is observed, we applied the same check to determine how far back in time the condition of free and fair elections applies.

On the other hand, a country may experience electoral turnover without qualifying as democratic. In fact, there is much scholarly interest in the class of "competitive authoritarian" regimes (Diamond 2002; Schedler 2006; Levitsky and Way 2010), which feature elections "that are sufficiently competitive to generate real uncertainty (and even turnover) but which fall short of democracy" (Levitsky and Way 2010: 13). Their distinguishing characteristic is that electoral contestation is deliberately skewed in favor of the incumbent. For this reason, authoritarian electoral turnover often occurs in combination with popular protest and the defection of state actors like the military and security apparatus. Particularly for recent cases, we check whether electoral alternation occurs consensually and leads to a competitive political system. For example, Cheibub et al. (2010) code Krygyzstan as democratic for 2005-6 following the electoral turnover in the aftermath of the Tulip Revolution. In contrast, we code this period as autocratic given the violence associated with the turnover, the oppressive rule of elected President Kurmanbek Bakiyev and a 2009 election marred by fraud and state manipulation.[5]

Naturally, the sources used to establish whether condition (2) holds change with the historical period. Regional and country histories were supplemented with information from Banks (1976) (especially before 1950), Alvarez et al. (1996) (covering 1950-90), Beck et al. (2001), Keefer (2005),

Norris (2008), country reports from Polity (Marshall and Jaggers 2010) and Freedom House (2010), and election reports from the EU, OSCE, and the Carter Center for the period after 1990.

(3) The suffrage condition tracks the substantial variation in the extension of the franchise prior to World War II. Since nearly all nations with free competitive elections (as well as most without) after 1946 had universal male suffrage, this is not a requirement in Cheibub et al. (2010). However, suffrage is also omitted from Polity.

Defining the condition of participation as having at least half of men enfranchised is, in some sense, arbitrary (as any particular threshold must be). However, we have settled on that threshold for two main reasons. First, imposing a condition of full male suffrage to qualify a country as democratic would reduce the number of democratic observations before World War I to a handful, resulting in a considerable loss of information on what Huntington (1991) calls the first wave of democratization. Democratic experiences prior to 1914 are important for explaining modern democratic development. The correlation between being democratic in 1900 (according to our criteria) and being democratic in 1950 and in 1975 (employing a requirement of universal suffrage) is 0.62 and 0.55, respectively. A similar loss of information would occur by making female suffrage a condition for democracy. The first country to allow women to vote was New Zealand in 1893, followed by Australia in 1901, Finland in 1907, and Norway in 1913. Second, our chosen threshold reflects an interest in exploring how material and class-based conflict drove the choices over political regimes across time. However, note that employing thresholds to define democracy has the built-in advantage of flexibility: Researchers can redefine thresholds to match the research question they are examining. For some research questions (such as the impact of female suffrage on fiscal policy), a more expansive participation condition with a different threshold would be more appropriate.

To determine suffrage for Western Europe before World War II, we relied on Mitchell's

(1975) detailed time series on voting rights. For countries outside Western Europe prior to World War II, we relied on country-based constitutional, legal, and historical sources, including Blaustein and Flanz (various years). Since the sources indicate the legal requirements for suffrage (gender, literacy, etc.) rather than the actual proportion of enfranchised individuals, we proceeded to match those requirements to census data. For example, in Chile, where being literate was a necessary requirement to vote until the mid-20th century, it was only by 1909-10 that a majority of adult males were recorded as being literate. Accordingly, we code Chile as fulfilling condition (3) at that point in time. For the modern period, the few uncertain cases were checked against Paxton et al. (2003).

The determining factor for a given year is whether the conditions were met on December 31, with one exception. If a country becomes autocratic and then democratizes within a single year, the year is coded as autocratic. This is done to capture the full set of democratic breakdowns and transitions.[6] As in Cheibub et al. (2010), we date democratic transitions from the inauguration of the elected government rather than the election.

Example: Germany Between 1870 and the Weimar Republic, Germany featured competitive legislative elections and universal male suffrage. However, the chancellor was exclusively responsible to the German emperor. Illustrating our first contestation rule, we code Germany as authoritarian until 1919.

Example: Venezuela Following Hugo Chavez's rise to power in 1999, Venezuela faced a steady deterioration of democratic competition. By 2007, the government was using state resources to sway elections, illegally disqualifying opposition candidates, and repressing opposition protests and media. Although this is a classic case in which the dividing line between democracy and dictatorship is

blurred, we code 2005 as the starting point of authoritarianism. In that year, an opposition boycott left the entire parliament to Chavez-aligned parties, who subsequently voted decree-making powers to Chavez.

Example: Guinea-Bissau After coming to power in a military coup, João Vieira won a multiparty presidential election in 1994 that was judged free and fair by international election observers. In 1998, a military rebellion took over the capital, finally expelling the President in 1999. We thus code 1994-7 as democratic. Although a new President was elected in 2000, he quickly dissolved the legislature and ruled by decree, leading to a military coup in 2003. A 2005 election brought Vieira back to power, but the regime was immediately beset by repeated coup attempts and military-led political violence, culminating in Vieira's assassination in 2009. Because the military's influence precluded rule by elected officials, we code the entire period from 1998 onward as autocratic.

Example: United Kingdom The UK satisfied the contestation conditions after 1832, but the franchise remained limited by gender and property qualifications. After the Second Reform Act of 1867, the franchise increased from 1 in 7 males to 1 in 3. Not until the Third Reform Act of 1884 could a majority of males vote, leading us to code the regime as democratizing the following year. Condition (2) excludes cases with an unelected upper chamber that vetoes legislation. However, the House of Lords never successfully exercised this authority, even during the constitutional crisis of 1909-10. This was codified into law by the Parliament Act of 1911.

Other Variables in Our Dataset

We code three other variables using our democracy measure. *Transition* takes the value 1 for a democratic transition, -1 for a democratic breakdown, and 0 for no transition. *Duration* equals the

number of consecutive years the country has had the same regime type. This is particularly useful as a control in empirical tests of regime transition (Beck et al. 1998). *Breakdowns* indicates a country's past number of democratic breakdowns.

4 Comparison with Other Measures of Democracy

We have already contrasted our measure and continuous measures of democracy. Hence, this section focuses on comparisons with other common dichotomous measures. Our approach is most usefully compared to the dichotomous coding of Cheibub et al. (2010) (hereafter, CGV), which expands Alvarez et al. (1996) using the same coding rules. In building our dataset, we have drawn inspiration from the conceptual and measurement criteria of CGV. Indeed, our two datasets agree on the coding of democracy in 95.7% of overlapping country-years. Nevertheless, we detail some contrasts with CGV in the following subsection. We then explore numerically how our coding matches up with CGV and other popular measures of democracy.

4.1 Comparison with CGV

For CGV, democracies must meet four conditions: an elected chief executive, an elected legislature, more than one party competing for major offices, and an "alternation in power under electoral rules identical to the ones that brought the incumbent to office" (Cheibub et al. 2010: 69). Four substantive differences between our coding and CGV's can be pointed out.

The first, and perhaps most consequential for empirical research, is the coverage of our data back to 1800. Although *Polity* is also available from 1800, existing dichotomous measures extend back only to 1946 (Golder 2005; Cheibub et al. 2010). This is a considerable restriction as it omits democratic transitions in a large class of countries. For instance, Boix and Stokes (2003) show that Przeworski et al.'s (2000) results relating economic development to democratization largely depend

on their limitation to 1950 onward. Many empirical results related to democracy may vary by time period. Given the importance of the geopolitical environment to democracy's spread (Huntington 1991; Levitsky and Way 2010; Boix forthcoming), the limitation of existing dichotomous measures to a period of American hegemony may be misleading. Gowa (forthcoming), for instance, argues that the democratic peace is a product of the Cold War rather than a general law among democracies. We hope the availability of a dichotomous measure of democracy back to 1800 can open up new avenues of empirical research, particularly concerning how the factors predicting democracy have evolved over time. We present some initial results of this type in Section 5.

Second, we add a suffrage requirement, although this criterion is of minimal importance for the time period covered by CGV. It is far more likely to matter when comparing our measure with *Polity* (which omits a minimal suffrage requirement) over a long historical period.

The third difference concerns the role of electoral alternation, a central requirement for democracy in CGV's coding. As explained above, we regard electoral turnover as a valuable indicator of democracy, particularly in older time periods, but consider it neither necessary nor sufficient for a country to qualify as democratic.

Finally, there is an important difference in the timing of democratic breakdowns and transitions. For CGV, if a ruler wins power through competitive elections, but then eliminates multi-party competition or unconstitutionally rewrites the electoral rules, they code the ruler's entire tenure as autocratic. In contrast, we code the country as autocratic from the point at which electoral contestation becomes uncompetitive or manipulated. This often coincides with the rise to power of an anti-democratic leader, but may also occur mid-term, as with Hugo Chavez in Venezuela. This timing particularly matters for scholars of democratic breakdown, as CGV's coding rule precludes the possibility of an *autogolpe* that does not coincide with leader turnover.

4.2 Other Comparisons

The set of other measures of democracy are too numerous to compare with ours in detail. However, given that our dataset's wide time and country coverage provides much of its value, we want to confirm that our coding tracks other popular measures for overlapping country-years.

FIGURE 1 HERE

Figure 1 compares our democracy coding with the cumulative *Polity* score (Marshall and Jaggers 2010), which runs from -10 to 10. The figure shows the fraction of country-years that are democratic according to our coding for each individual *Polity* value. Also shown is the same relationship for CGV's measure. By way of example, for those country-years with a *Polity* value of 5, 50.2% are democratic according to our coding and 76.8% are democratic according to CGV. Figure 1 shows that those cases with a Polity *Polity* below are nearly all autocratic in our coding, whereas the likelihood of democracy increases steadily for higher *Polity* values.

TABLE 2 HERE

Table 2 displays the level of agreement shown by six dichotomous measures of democracy. Each cell indicates the fraction of country-years on which the two corresponding datasets agree. The six datasets are our own (BMR), CGV, a recoding of *Polity* using a threshold of 5 (Marshall and Jaggers 2010), a recoding of Freedom House (2010) using a threshold of 3.5, Golder (2005), and Hadenius and Teorell (2007). For Polity and Freedom House, the chosen thresholds maximize the correlation with both our coding and CGV's. The levels of agreement are fairly high but vary from a low of 89.1% to a high of 95.8%. When averaged across the five comparisons, our coding shows the greatest level of concordance among the six measures.

5 Democracy Over Time

We now turn to an analysis of how our measure of democracy and its predictive factors have

evolved over time. Despite scholarly interest in the historical roots of democracy (e.g., Moore 1966; Acemoglu et al. 2001; Berman 2007; Boix forthcoming) and the socioeconomic and political characteristics of countries that contribute to democracy (e.g., Dahl 1971; Przeworski et al. 2000; Boix 2003), this extensive literature has maintained a fairly static conception of democratic development. Although the literature quickly moved beyond the early cross-sectional empirical tests of the modernization theorists (Lipset 1959; Deutsch 1961), panel models predicting democracy in recent studies nearly all assume that the independent variables have constant effects across time.

The current section puts this assumption to the test by analyzing the predictive strength of different variables for five-year time periods running from 1825-2005. Although we focus on our measure of democracy, we also derive results using *Polity*. In so doing, we hope to illustrate the value of our historical data for inferences on democracy and to indicate how these inferences can depend on the exact measure of democracy tested. We stress at the outset that these tests are purely correlational, hence represent only a first step in constructing a story of time-varying causal factors.

FIGURE 2 HERE

5.1 Time Trend

As a preface, Figure 2 displays the average level of democracy across the world between 1800 and 2007. The solid line shows the fraction of countries we rate as democratic in each year. The dashed line depicts the world's average *Polity* score. The general pattern, discussed in Huntington (1991), is similar for both measures—a steady rise until the 1920s, a sharp drop in the 1930s followed by a jump after World War II, a decline in the 1950s and 1960s, and finally a sustained rise from the mid-1970s onward. Although *Polity* and our measure track each other very closely in modern times, there is a large gap prior to the 1940s in which *Polity* assigns much higher average democratic scores than the fraction of democracies would indicate. This is because our suffrage condition leads us to rate several otherwise politically competitive countries as non-democratic.

FIGURE 3 HERE

5.2 Predictive Strength of Selected Variables

We now consider how different variables have changed in their correlation with democracy over time. Figure 3 presents the results for *GDP/capita* (ln), the natural log of real GDP/capita (in 2000 dollars), taken from Gleditsch (2002) for 1950-2004 and Maddison's (2008) historical data for earlier years.[7] Each black dot represents the estimated coefficient on *GDP/capita* from a separate logit regression predicting our measure of democracy in each country-year over a five-year period. The only control variable in each regression is a linear year term, which serves to de-trend the data. The year corresponding to each dot is the final year in the five-year period. The black bars represent the 95% confidence intervals for the coefficients.

Also shown in outline are the 95% confidence intervals for the coefficients on *GDP/capita* from separate OLS regressions predicting *Polity* in each country-year over a five-year period. Again, the only control variable is a linear year term. Because we use logit regression for our measure and OLS for *Polity*, the two coefficients are not directly comparable. What we focus on instead is the temporal pattern within each measure. After examining *GDP/capita*, this analysis is repeated for *Land Equality*[8] (the percentage of land cultivated by family farms, from Vanhanen 2003) in Figure 4 and *Latitude* (the absolute value of the capital city's latitude, divided by 90, from La Porta et al. 1999) in Figure 5. Average income and economic equality are two of the most common variables employed in socioeconomic studies of democracy. Latitude is less frequently analyzed as a democratic predictor, but ties into the recent interest in the historical and geographic precursors of institutional development (Diamond 1998; Acemoglu et al. 2001; Easterly and Levine 2003; Olsson and Hibbs 2005). In particular, higher *Latitude* represents a cooler climate more amenable to high-yield crops and European settlement.

The results for *GDP/capita* in Figure 3 are quite striking, with considerable variation over

time in the variable's predictive value. For our measure, *GDP/capita* is significantly positive in every period, rising slightly in magnitude between 1825 and 1930. The coefficient then sharply drops until the 1950s, remaining small in magnitude to the present day. For *Polity*, the coefficients on *GDP/capita* are insignificant until about 1860, rise steadily until the 1940s, and slowly decline thereafter. Although not entirely contradictory, the two patterns are distinct. Results for our measure indicate a pronounced decline in correlation from before to after World War II that does not exist for *Polity*. Part of this difference may result from the growing variation in autocracies (from tinpot dictatorships in poor countries to multiparty authoritarian systems in middle-income nations) over the past half century that our dichotomous index, which is geared toward the distinction between democracy and non-democracy, does not capture.

FIGURE 4 HERE

As seen in Figure 4, the two patterns for *Land Equality* are even more distinct. The coefficients predicting our democracy measure steadily decline in magnitude between 1860 and the present day. As a result, the percentage of family farms is now only a marginally significant predictor of democracy. A reasonable criticism is that this may be because the disparity of *land* ownership is no longer the relevant metric of economic equality. However, we find a similar pattern when using income inequality, as measured by the percentage of income going to the richest 20 percent.[9] For *Polity, Land Equality* actually rises in predictive power until the 1980s, and then falls sharply after the end of the Cold War.

FIGURE 5 HERE

Finally, Figure 5 shows the coefficients for *Latitude*. Perhaps surprisingly, this is a significant predictor of our democracy measure in every period after 1845, and has similar predictive power as *GDP/capita* over the last 25 years. Moreover, *Latitude* and *GDP/capita* remain significant in nearly every period when controlling for both simultaneously. The pattern over time is similar to that of

GDP/capita: a slow, steady rise until the 1930s followed by a sharp drop until the 1950s. Again, the pattern for *Polity* is noticeably dissimilar. It begins significantly negative, rises sharply until the 1930s, and then holds steady.

Two conclusions from the preceding analysis are worth emphasizing. First, the patterns we find, and thus the empirical conclusions researchers are likely to draw, differ between our democracy measure and *Polity*. Second, two of the economic variables most commonly tied to democracy, average income and economic equality, have declined over time in their correlation with democracy. We now consider whether this is true generally of economic modernization variables.

5.3 Predictive Strength of Sets of Variables

To measure the predictive power of various sets of related variables, we use a similar methodology as above. For five-year periods from 1825-2005, we run separate logit regressions predicting our measure of democracy.[10] The independent variables are discussed below and do not include a linear year term.[11]

There is a lack of consensus over which test statistic best captures goodness of fit for predicting a dichotomous variable. A common metric for logit and probit models is the *Percent Correctly Predicted (PCP)*. This considers the dichotomous outcome for each case that the model estimates as more likely and compares it to the actual outcome; the PCP is the fraction of cases correctly predicted. However, this method is inappropriate for doing comparisons when the distribution of the variable being predicted differs across samples. Although roughly half of countries today are democratic, fewer than 1 in 10 were democratic prior to 1900. Thus, for samples prior to 1900, a model with only a constant term will generate a PCP of over 90% by predicting all countries as non-democratic. This cannot be directly compared to the PCP for a modern period. A related test statistic called the *Proportional Reduction in Error (PRE)* (Brenner et al. 1990; Hagle and Mitchell

1992) is designed to account for this problem by subtracting out the *Percent in the Modal Category (PMC)* (of the dependent variable):

$$PRE = \frac{PCP - PMC}{1 - PMC}$$

PRE thus measures the predictive success of a logit or probit model above that of a model with only a constant. We use PRE as a summary of goodness of fit for our logit models.

FIGURE 6 HERE

In Figure 6, we show the predictive success of economic variables over time. The solid line includes only *GDP/capita* (ln). The dashed line includes a set of five standard economic modernization variables: *GDP/capita* (ln), *Land Equality*, urbanization (the population percentage in urban areas, from Vanhanen 2003; World Bank 2008),[12] the literacy rate (Banks 1976; Norris 2008), and the population share employed in the agricultural industry (Banks 1976; Norris 2008; World Bank 2008).[13] Although highly accurate at predicting democracy prior to World War I, these variables have steadily declined in predictive power since then. Over the past 40 years, only about 40% of the unexplained variance in democracy is predicted.[14] An unexpected finding is that it is primarily the four economic variables besides *GDP/capita* that predict democracy before 1920, whereas *GDP/capita* provides little to no predictive power in the 19th Century. In comparison, these four variables have almost no additional explanatory power after 1920.

FIGURE 7 HERE

Figure 7 extends this analysis to three other sets of variables. Unlike the economic variables, these are predominantly fixed or slow-moving variables. First, we look at colonial variables: a dummy for each colonizing country (own coding, with 10 country dummies and a dummy for no colonial history), dummies for the origin of the country's legal system (La Porta et al. 1999), and a measure of settler mortality (the log of European settlers' mortality rate at colonization time, with

non-colonized countries coded as 0, from Acemoglu et al. 2001). The final variable is meant to capture the institutional legacy of colonizers (Acemoglu et al. 2001). Second, we look at four fixed ethno-religious variables: the percent Muslim, the percent Catholic, the percent Protestant (all three from La Porta et al. 1999), and ethno-linguistic fractionalization (Roeder 2001). Third, we test several fixed geographic variables: dummies for each of eight regions,[15] *Latitude*, and the percentage of the country's land area with mountainous terrain (logged, from Fearon and Laitin 2003).

As seen in Figure 7, there is considerable variation in predictive accuracy over time for each set of variables. However, unlike for the economic variables, there is not a consistent decline for any of them. If anything, the geographic and ethno-religious variables have increased in predictive power since 1900. Moreover, the geographic variables have a higher PRE than the economic modernization variables from the mid-1970s onward.[16] In other words, in the current world, a country's location is a better predictor of its democratic nature than its economic development.

5.4 Discussion

We found that a standard set of economic modernization variables sharply declined in their predictive accuracy since the early 20th Century, falling to the point that fixed geographic variables are now better predictors of democracy. We speculate on three potential causes.

First, average income has a declining marginal effect on the likelihood of democracy (Przeworski et al. 2000; Boix forthcoming), which can impact the correlation between democracy level and income. Over the past 60 years, most wealthy democracies have multiplied their average incomes, but long ago reached a ceiling on their democracy scores. When increases in an explanatory variable do not translate into increases in the dependent variable, this dampens the observed correlation. Although this may be a contributing factor, it is doubtful that this fully explains the reduced correlation over time. Since we are using logged *GDP/capita*, we are already assuming a

declining marginal contribution of average income. In addition, logit models are less susceptible to ceiling effects than OLS models, so this is more of a concern for the results on *Polity*. Lastly, we get virtually identical results when we rerun the models after capping *GDP/capita* at either $6,000 or $10,000.[17]

Second, we speculate that domestic economic factors may matter less over time because of a changing international environment. After World War II, such a shift was represented, among other factors, by the Soviet occupation of Eastern Europe and selective Western support for Third World dictatorships during the Cold War (Boix forthcoming; McKoy and Miller forthcoming). The current international environment enables developing countries to maintain democratic institutions through external aid and cultural ties to the democratic West (Huntington 1991; Carothers 1999; Levitsky and Way 2010). Scholars also find that the democratic character of a country's neighbours influences the likelihood of democratic transition and survival (Starr and Lindborg 2003; Brinks and Coppedge 2006; Gleditsch and Ward 2006; Boix forthcoming). In each case, there is at least some decoupling of a country's domestic economic conditions and its chances for democracy.

Third, rather than calling socioeconomic explanations of democracy into question for the modern world, our results may simply imply that the relevant variables are changing. For the 19th Century, income may perform well as a proxy for country traits that were also propitious for democracy. Given that many countries have recently developed through resource extraction, income may not perform so well anymore. However, the task of finding the most relevant set of predictive economic variables is not just a matter of adjusting for oil wealth, as we also find that economic equality, urbanization, literacy, and agricultural dependence have declined in their correlation with democracy. We leave it to future research to determine whether international factors have in fact reduced socioeconomic contributions to democracy, a different set of economic variables now matter, or there is some other explanation for our findings.

6 Conclusion

This paper describes a dataset on democracy that we hope will continue to be of use to social scientists. Our dataset covers 1800-2007 and 213 countries, with a total of 15,972 democracy observations. We have argued that the coding's distinguishing features—its long time span and its dichotomous nature—are of particular value to empirical work on democracy.

Building on Dahl (1971), our coding relies on two necessary conditions for a country to qualify as democratic. First, a country must have free and fair elections for the legislature, as well as an executive that is accountable either directly to the people or to the elected legislature. Second, the country must allow at least half the male population to vote. We compared our coding with other common measures of democracy. Although we find broad agreement, we do note some important differences, such as our inclusion of a suffrage requirement and an exclusion of a strict electoral alternation rule.

To illustrate the measure's time coverage and some of the differing inferences we get from *Polity*, we presented several analyses of how democracy's predictive factors have changed over time. We showed that the correlation between our measure and common explanations of democracy vary considerably by time period, finding for instance that standard economic modernization variables declined in their predictive power over the past century. We speculate that this may be because of changing international conditions or a shifting set of relevant socioeconomic factors. Future work should continue to investigate how the causal factors behind democracy have evolved over time and what this implies for the study and advancement of democracy.

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Table 1: Current Debates on Measuring Democracy

Debate	Argument	Authors
Components	Minimal	Schumpeter 1942/1950, **Alvarez et al. 1996**, **Cheibub et al. 2010**
	Extensive	e.g., Diamond et al. 1990, Munck and Verkuilen 2002, Gerring et al. 2009
	Suffrage Included	**Cutright and Wiley 1969**, **Dahl 1971**, **Bollen 1980**, **Coppedge and Reinicke 1990**, **Arat 1991**, **Bollen 1998**, **Altman and Pérez-Liñán 2002**, Munck and Verkuilen 2002, Boix 2003, **Paxton et al. 2003**, **Mainwaring et al. 2007**
Numerical Form	Dichotomous	Sartori 1987, Huntington 1991, **Alvarez et al. 1996**, Przeworski et al. 2000, **Golder 2005**, **Cheibub et al. 2010**
	Polychotomous	**Gasiorowski 1996**, Linz and Stepan 1996, Collier and Levitsky 1997, Diamond 2002, **Bowman et al. 2005**, **Hadenius and Teorell 2007**, **Mainwaring et al. 2007**, **Levitsky and Way 2010**
	Continuous	**Cutright 1963**, Bollen and Jackman 1989, Elkins 2000, **Freedom House 2010**, **Marshall and Jaggers 2010**
	Single-Dimensional	**Bollen 1980**, Bollen and Grandjean 1981, **Pemstein et al. 2010**
	Multi-Dimensional	**Dahl 1971**, Bollen and Paxton 2000, **Altman and Pérez-Liñán 2002**, **Vanhanen 2005**, Gates et al. 2006, **Coppedge et al. 2008**, Gerring 2008, Gerring et al. 2009, **Miller 2010**
	Conditional on Research	Collier and Adcock 1999
Measurement	Aggregation/Scale	**Coppedge and Reinicke 1990**, **Bollen 1993**, Gleditsch and Ward 1997, Bollen and Paxton 2000, Munck and Verkuilen 2002, **Treier and Jackman 2008**, **Pemstein et al. 2010**
	Latent Democracy Score	**Bollen 1980**, Bollen and Grandjean 1981, Bollen and Jackman 1989, **Coppedge et al. 2008**, **Treier and Jackman 2008**, **Miller 2010**, **Pemstein et al. 2010**
	Problems with Thresholds	Bogaards 2010, **Cheibub et al. 2010**
	Measure Affects Results	**Bollen 1980**, Bollen and Jackman 1989, Elkins 2000, Boix 2003, Boix and Stokes 2003, Casper and Tufis 2003, **Treier and Jackman 2008**, Bogaards 2010, **Cheibub et al. 2010**, Boix forthcoming

Notes: The table summarizes the literatures on three ongoing debates concerning the proper measurement of democracy: its constituent components, the numerical form of democracy, and how different components are combined into a single measure. Works listed in bold offer their own measures of democracy.

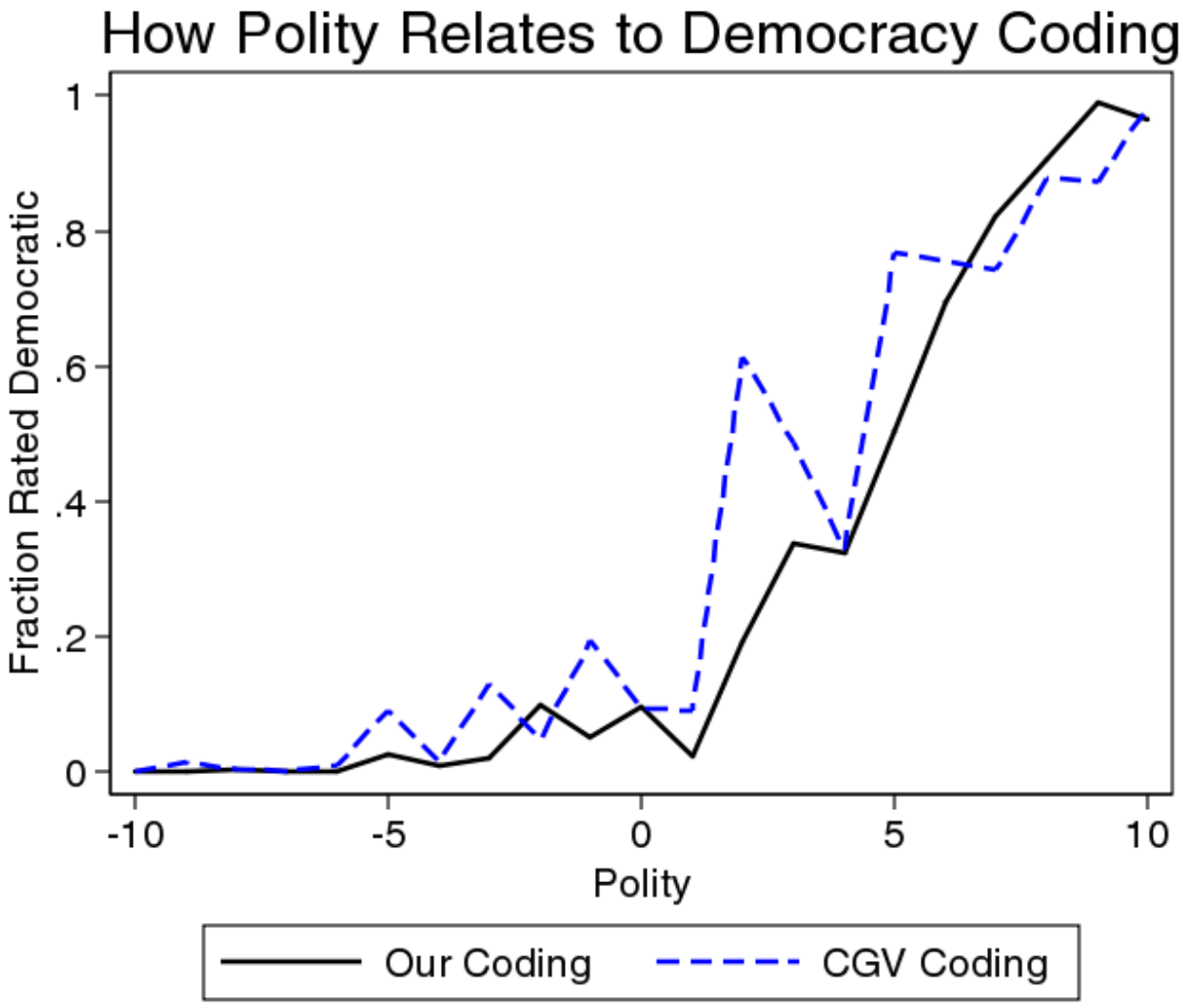

Figure 1 For each value of Polity's cumulative democracy score, the table shows the fraction of country-years rated democratic by our coding and the coding in Cheibub et al. (2010) (CGV).

Table 2: Comparison of Six Dichotomous Democracy Measures

Variable	BMR	CGV	Polity ≥ 5	FH ≤ 3.5	Golder	HT	Average
BMR	1.000						0.942
CGV	0.957	1.000					0.924
Polity ≥ 5	0.939	0.921	1.000				0.928
FH ≤ 3.5	0.934	0.902	0.933	1.000			0.921
Golder	0.958	0.950	0.924	0.913	1.000		0.931
HT	0.921	0.891	0.921	0.924	0.910	1.000	0.913

Notes: The table shows the fraction of country-years agreed on by six dichotomous measures of democracy. The final column presents the average level of agreement for each measure, averaged across the five comparisons. Our coding (BMR) shows the greatest level of concordance with the other measures.

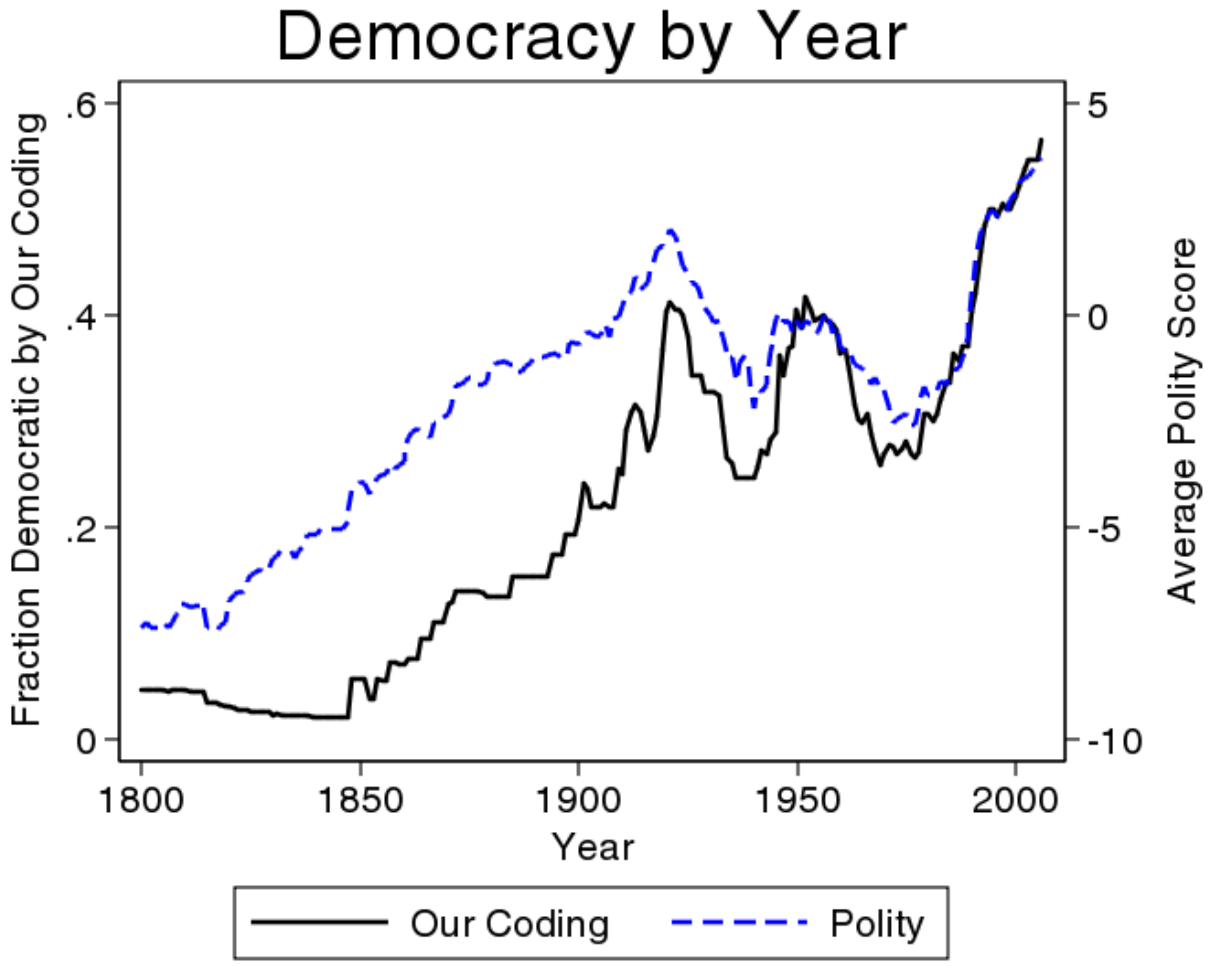

Figure 2 For each year, the figure shows the fraction of countries rated democratic by our coding and the average *Polity* score across the world.

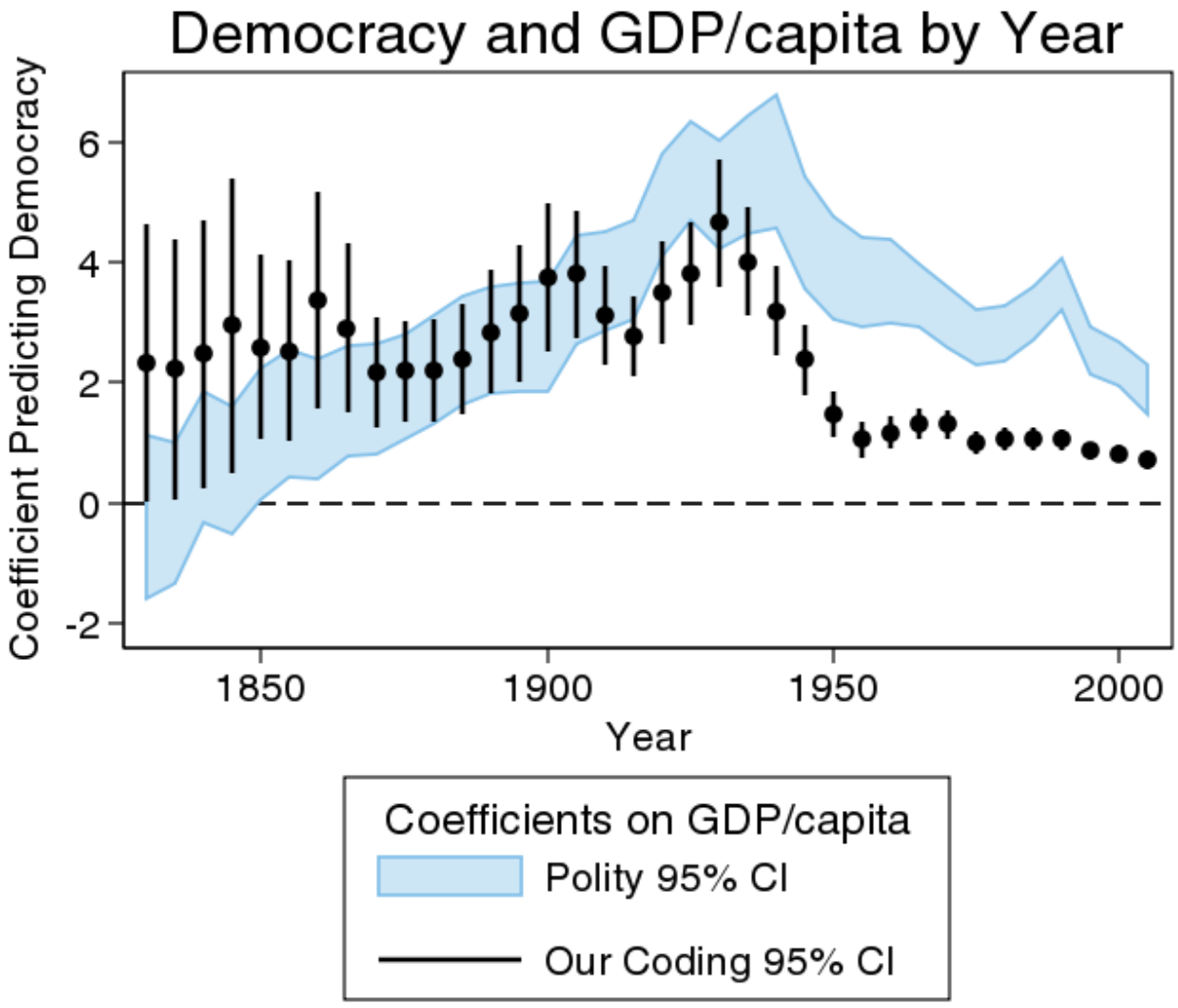

Figure 3 For several five-year periods, the figure shows the coefficients on *GDP/capita* (ln) from separate logit regressions (with year as the sole control variable) predicting our measure of democracy and OLS regressions predicting *Polity*. 95% confidence intervals are also shown.

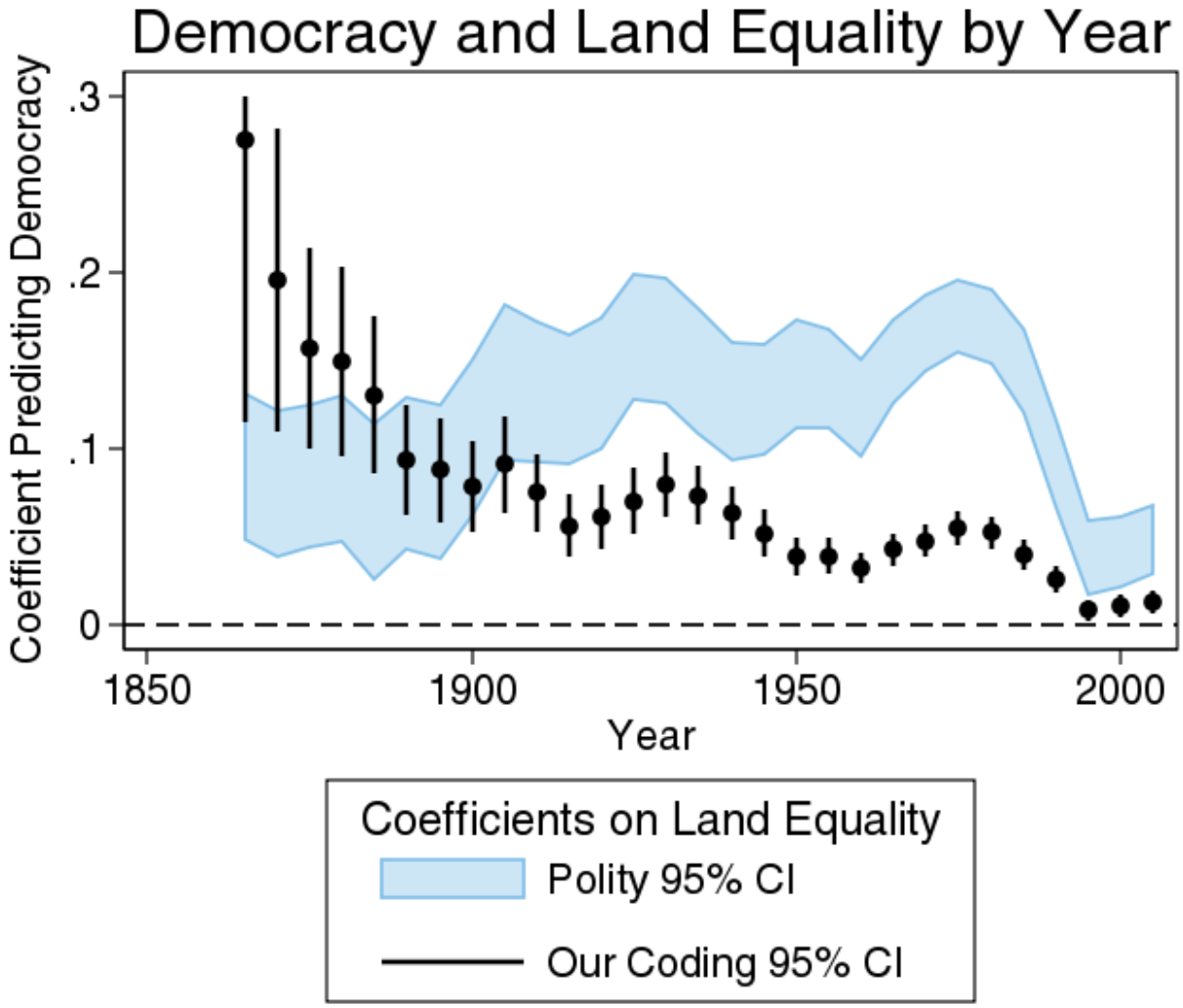

Figure 4 For several five-year periods, the figure shows the coefficients on *Land Equality* from separate logit regressions (with year as the sole control variable) predicting our measure of democracy and OLS regressions predicting *Polity*. 95% confidence intervals are also shown. For clarity of presentation, the top of the confidence interval for 1865 is cut off.

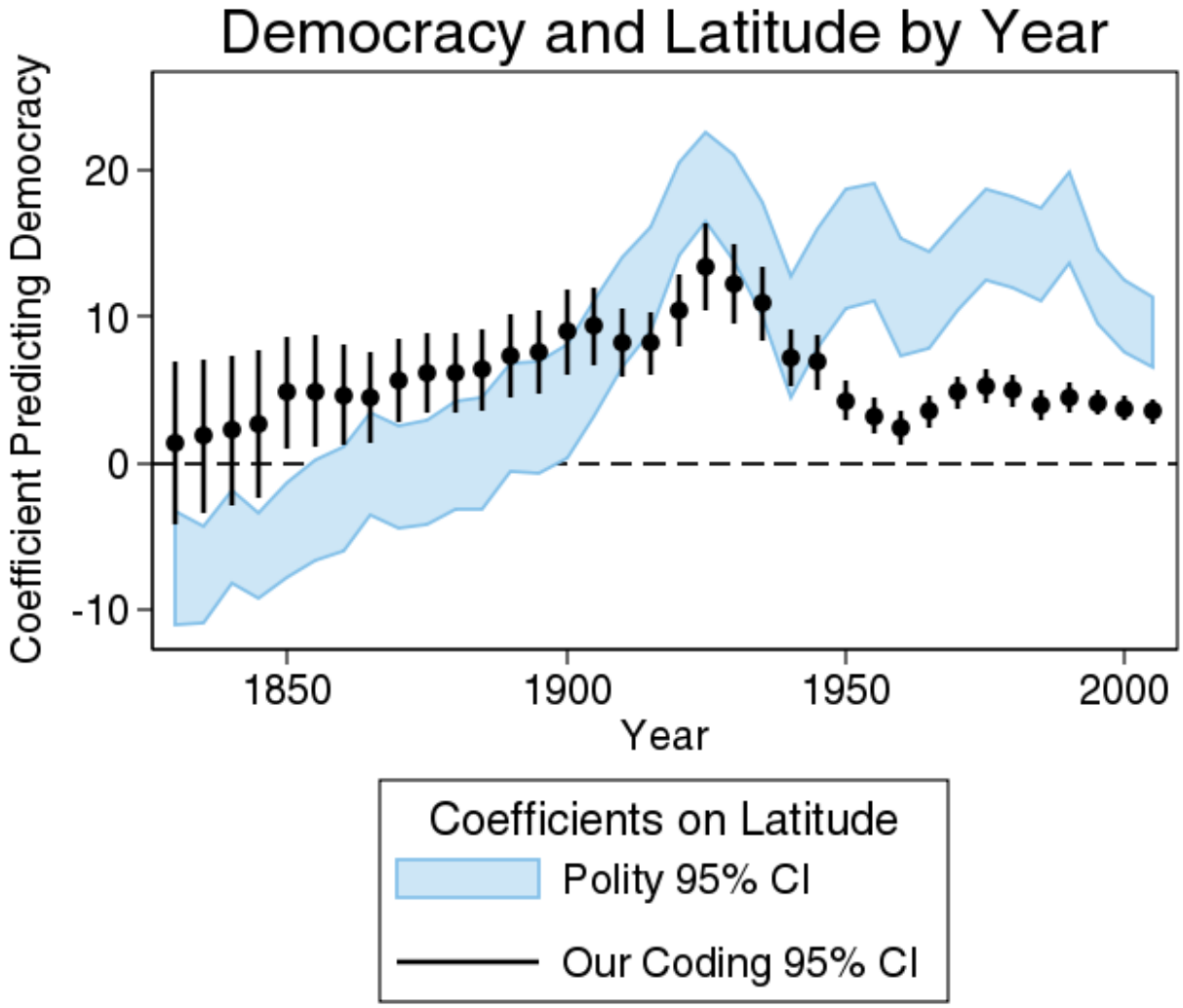

Figure 5 For several five-year periods, the figure shows the coefficients on *Latitude* from separate logit regressions (with year as the sole control variable) predicting our measure of democracy and OLS regressions predicting *Polity*. 95% confidence intervals are also shown.

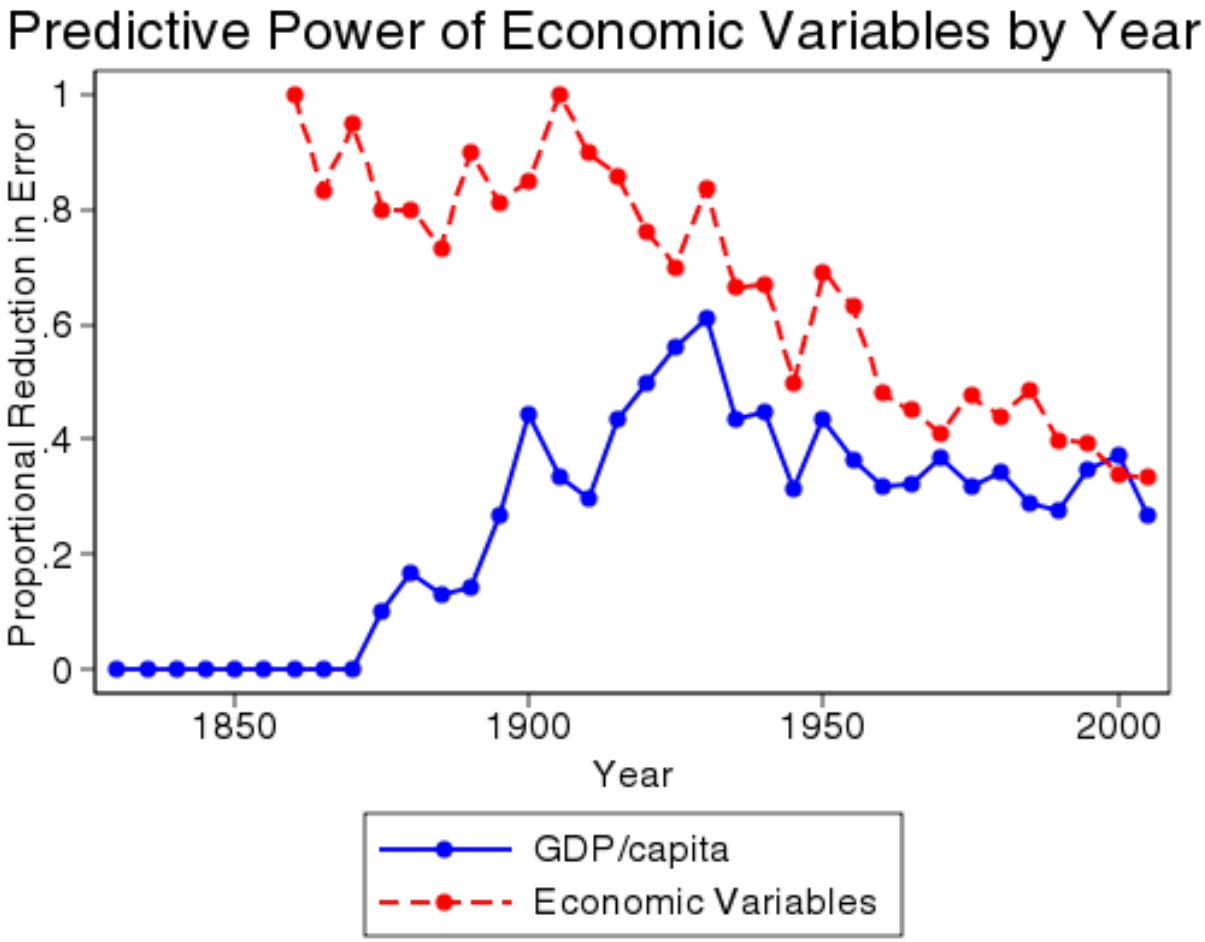

Figure 6 For several five-year periods, the figure shows the Proportional Reduction in Error (PRE) for predicting our measure of democracy from sets of variables. PRE is the portion of regime types correctly estimated by a logit regression over and above the modal number in the period. GDP/capita includes only logged GDP/capita. The economic variables include logged GDP/capita, urbanization, land equality, literacy, and the size of the agricultural sector.

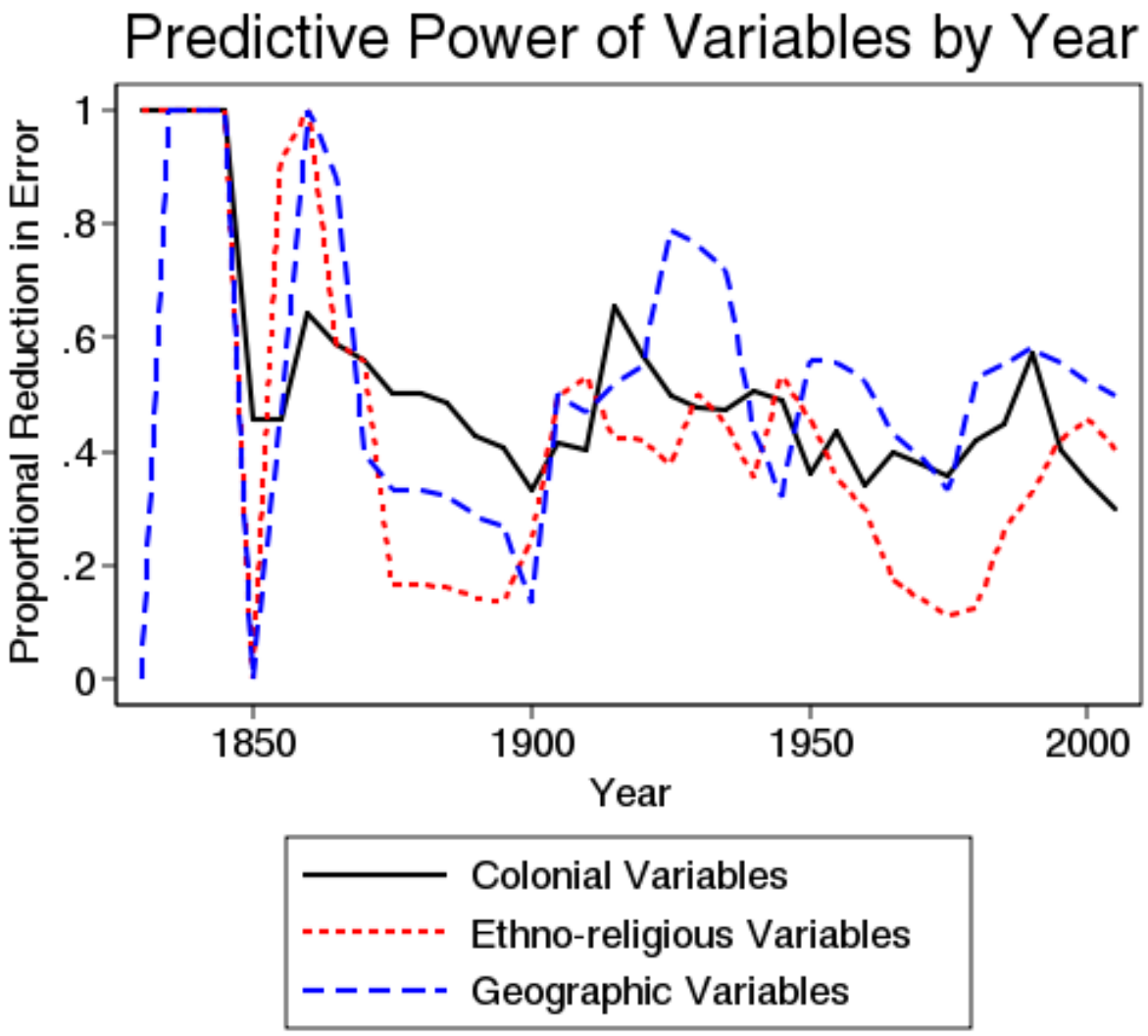

Figure 7 For several five-year periods, the figure shows the Proportional Reduction in Error (PRE) for predicting our measure of democracy from sets of variables. The colonial variables include dummies for each colonizing country, dummies for the origins of the country's legal system, and a measure of settler mortality. The ethno-religious variables include the percentage Muslim, Catholic, and Protestant, and a measure of ethno-linguistic fractionalization. The geographic variables include dummies for each of eight regions, the country's latitude, and the percentage of the land area with mountainous terrain.

1 Polychotomous measures of democracy have been particularly targeted at categorizing "competitive authoritarian" or "hybrid" regimes that feature electoral competition but are not fully democratic (Gasiorowski 1996; Hadenius and Teorell 2007; Mainwaring et al. 2007). Although useful, existing polychotomous measures are limited by time period or region.

2 A final problem with threshold rules is that they may overestimate the likelihood of democratic transitions and breakdowns from countries moving slightly on the underlying continuous score.

3 Where possible, we also attempt to verify that no major parties are excluded from contestation or organization, with exceptions for parties that explicitly endorse violence or oppose democratic government. For instance, we differ from Alvarez et al. (1996) in coding Argentina as non-democratic until 1973 because the military intervened to prevent a Peronist victory over the two previous decades.

4 A potential statistical problem also arises from CGV's rule in that countries that implement more frequent changes of their electoral rules (as in much of sub-Saharan Africa) are less likely to experience electoral turnover under a given set of rules, leading to an under-estimation of their democratic credentials.

5 The OSCE's report on Krygyzstan's 2009 election can be found at www.osce.org/odihr/elections/51201.

6 The parallel case of a brief democratic episode is not coded as democratic since such a regime likely lacks true popular sovereignty.

7 To match with Gleditsch (2002), Maddison's (2008) data are linearly adjusted through a country-specific multiplicative term calculated from three overlapping years.

8 This variable is used to proxy for economic equality in Boix (2003) and Boix and Stokes (2003). It is linearly interpolated for full coverage.

9 This data is taken from Deininger and Squire (1996) and UNDP (2004), which together cover

1890-2004.

10 Since *Polity* is a continuous variable, test statistics for goodness of fit are not directly comparable to those for dichotomous variables. We omit the companion analysis of *Polity* to concentrate on our own measure.

11 We do not include a year term as this would inflate predictive success during periods of rapid world-level change in democracy. Since the earlier comparisons isolated the coefficient on the variable of interest, adding the year term was unproblematic.

12 The years 1858-1945 are a linear interpolation of Vanhanen's (2003) data. The years 1946-2004 are an average of Vanhanen (2003) and World Bank (2008).

13 The years 1858-1971 are taken from Banks (1976), the years 1972-9 from Norris (2008), and the years 1980-2004 from World Bank (2008).

14 All five of these variables have declined in their correlation with democracy since at least the 1930s. These findings for *GDP/capita* and *Land Equality* are discussed above.

15 These are Eastern Europe and Soviet Union, Latin America, North Africa and the Middle East, sub-Saharan Africa, Western Europe and the British settler colonies, East Asia, Southeast Asia and Pacific, and South Asia.

16 This is also true if we compare the Adjusted-R^2 of OLS regressions predicting *Polity*.

17 The former value is a key figure for determining democratic stability in Przeworski et al. (2000). Both values are used to calculate marginal effects in Boix (forthcoming).