Electoral Contestation:[1]

A New Measure and an Empirical Test

John Gerring
Department of Government
University of Texas at Austin

Allen Hicken
Department of Political Science
University of Michigan

Daniel Weitzel
Department of Government
University of Texas at Austin

ABSTRACT

The study of electoral competition generally focuses on districts or regions (rather than polities) or a narrow slice of democratic polities. We present a new national-level dataset that registers the performance of the top three parties in elections held in sovereign and semi-sovereign polities throughout the world from 1789 to the present. With this data, we present a new approach to aggregation that incorporates three components of contestation: the existence of elections, the closeness of the vote (competitiveness), and changes in performance of the top parties (turnover). To illustrate the utility of this new index we explore its possible impact on government consumption. We find that contestation has a curvilinear – inverted U – relationship to this outcome, a relationship not revealed with indices focused more narrowly on competitiveness.

Keywords: electoral contestation, party competition, competitiveness, government spending

Abstract: 127 words

Manuscript: 11,350 words (without abstract and appendices)

[1] This is a preliminary draft. Please do not cite or distribute without permission of the authors. Comments and suggestions appreciated.

Electoral competition is widely regarded as a central element of democracy (Becker 1958; Dahl 1956, 1971; Sartori 1976: 217; Schumpeter 1942/1950; Strom 1992). Studies seem to indicate that enhanced competition leads to more programmatic campaigns (Keefer 2006; Keefer & Vlaicu 2008; Lachat 2011), greater activity on the part of representatives (Konisky & Ueda 2011), greater responsiveness or accountability (Ansolabehere et al. 2001; Beer & Mitchell 2004; Gordon & Huber 2007; Griffin 2006; Jones 2013; Powell 2000; but see Brunell 2008; Cleary 2007; Fiorina 1973), greater efficiency and lower political rents (Barro 1973; Stigler 1972; Wittman 1989, 1995), political reform (Borges 2008; Geddes 1991, 1994; Grzymala-Busse 2007; Heller, Kyriacou & Roca-Sagalés 2011; Ting et al. 2013), lower corruption (Weitz-Shapiro 2012), lower levels of political protest (Arce & Mangonnet 2013), and stronger growth performance (Berkowitz & Clay 2012; Besley, Persson & Sturm 2010; Padovano & Ricciuti 2009).[2]

However, it is an open question how best to define and operationalize electoral competition, and there are many options on the table. Our objective is to present a broad conceptualization, one that captures multiple dimensions of the concept, that is applicable to all political settings, that can be measured with extant data in contemporary and historical eras, that can be applied to politics at any level (subnational or national-level), and that is consistent with the larger goal of electoral accountability. We refer to this as an index of *contestation*, to be distinguished from measures of *competitiveness* or *volatility*.

To do so, we collect historical data from a variety of sources, recording the electoral performance of parties in presidential and parliamentary elections. The resulting dataset encompasses sovereign and semi-sovereign polities throughout the world observed from 1789 to the present, generating ~36,000 polity-year observations. This is considerably larger than other cross-national political science datasets, whether focused on democracy (Polity IV), conflict (COW), or leadership (Archigos). (The resulting dataset will be posted in its entirety on Dataverse.)

In Section I, we review extant approaches to the conceptualization and measurement of electoral competition. Next, we introduce our proposed index. In Section III, we compare this index to extant indices. Section IV examines patterns of contestation across the world over several centuries. Section V applies the contestation index to a research question that has been studied extensively at subnational levels: the relationship between contestation and government spending. We find that there is a strong relationship between contestation and government consumption but that it is likely to be curvilinear rather than linear (as previous research suggested). This relationship is not registered by other measures of electoral competition, offering a proof of concept for the proposed index.

Before beginning, we want to call attention to a confusing aspect of our topic – the superfluity of terms with overlapping meanings. We do not propose to legislate universally acceptable meanings for this crowded semantic terrain. However, it is important to clarify terms and

[2] Of course, contestation can have deleterious effects if parties utilize para-military groups to round up supporters and intimidate opponents, as occurred in Weimar Germany and contemporary Jamaica (Clarke 2006). We should also bear in mind that in winner-take-all elections competition may entail a decline in responsiveness and trust (Brunell 2008; Brunell & Buchler 2009; Buchler 2005, 2011). Since only one candidate or party can win, all those supporting the losing candidate or party are not likely to be well-represented and are likely to be less trusting of the candidate who wins. In a highly competitive district, this is nearly half of the voters. (The same dynamic does not apply in an electoral system in which votes are allocated proportionally to candidates and there are multiple seats in a single district.) There is also work that finds that high levels of competitiveness can exacerbate clientelism and corruption (Lindberg and Morrison 2008; Nyblade and Reed 2008; Golden and Tiwari 2009). These caveats notwithstanding, contestation seems to be associated with more good things than bad. For a wide-ranging discussion, see Bardhan & Yang (2004).

to use them consistently. To that end, Figure C1 offers a Venn diagram indicating how key terms used in this study – competition, contestation, volatility, competitiveness, and turnover – relate to one another.

I. Electoral Competition

Electoral competition is an easy concept to grasp intuitively but a hard concept to define if that definition is to be consistent with the larger goal of electoral accountability.[3] This becomes clear if we consider the concept as it applies to market settings.

Competitive markets are assumed to be efficient markets because firms produce private goods through a contractual relationship among consumers who are free to shop around to find what they desire at the lowest price. The more options there are, the greater the competitive pressure on firms to provide high quality at affordable prices. Hence, one might measure competition in a market by examining entry barriers (e.g., the frequency of new firms or the age of all existing firms), dispersion of market share, or fluctuations in market position (Becker 1958).

The political marketplace is different. While firms provide a service through direct contracts with consumers, most parties provide no services directly. Instead, they compete for control of government and it is the government that provides the desired good, generally a public good. This means that all parties are not of equal importance; those that control the executive, or have the capacity to do so, matter more. This is not to say that small parties are irrelevant; but they surely matter less than in a true marketplace, where a single small firm can fundamentally transform a sector by offering better quality, choice, or price. Since the price and quality of public goods cannot be assured by shopping around, as in a market, one must assume a system of accountability in which the party or coalition controlling government is rewarded or punished for good/bad behavior. Here, small parties may exacerbate problems of identifiability, and hence of accountability. Likewise, a constant churning of parties – or, even worse, a party-less landscape in which individual candidates compete – destroys any possibility of accountability.

If we desire a concept of political competition that is consistent with the ideal of electoral accountability we must adopt three rules of thumb. We must regard political parties (rather than individual incumbents and candidates) as units of analysis. We must focus on the largest parties, or at least grant them greater weight. And, we must distinguish turnover at the top (presumably a source of accountability) from the normal entry and exit of parties from the system (whose implications for accountability are ambivalent).

In crafting a useful empirical index we must also consider several additional factors of a logistical nature. A good index should build on data that is widely available, so that coverage – through time and across countries – is maximized. A good index should also be applicable to a wide range of units (countries, regions, districts) and across different electoral system rules (e.g., SMD and MMD). If it is limited in range, testing and theorizing is constrained. And a good index should rely on objective features of elections rather than on features requiring subjective coding – which may be subject to bias and the meaning of which is harder to interpret.

In light of these desiderata, let us briefly examine some of the most prominent indices of competition in use today.

Competition. To measure competition, Vanhanen (2000) focuses on the size of largest party as a share of all votes or seats, adjusted with several additional coding rules. First, where information

[3] General discussion of the concept and various measures can be found in Altman, Perez-Linan (2002), Bartolini (1999, 2000), Borman, Golder (2013), Kayser, Lindstadt (2015), Mainwaring, Gervasoni, Najera (2017), Strom (1989).

on vote shares is unavailable, seat shares are substituted. Second, if competitors in legislative elections are independent candidates rather than organized parties the largest party is automatically assigned a score of 30%. Third, if the vote (or seat) share garnered by the largest party falls below 30% it is nonetheless assigned a score of 30%, under the assumption that any further diminution is a product of electoral system laws and is irrelevant to the quality of democracy. Fourth, if the executive is unelected (e.g., a monarch, military leader, revolutionary group), the largest party is assumed to have won 100% of the vote. Fifth, in polities with a separately elected chief executive, results for presidential and legislative elections are combined based on a judgment of how dominant each branch is. If branches are co-equal, each is assigned a weight of 50%; if the executive is more powerful it receives a weighting of 75%; and so forth.

It is not possible to tell from the data and supporting materials how many observations, or which observations, these five ad hoc coding principles affect. In any case, these special coding rules may be justifiable in light of Vanhanen's theoretical goal, which is to construct a composite measure of democracy derived from a multiplication of the foregoing index with an index of participation (turnout in each election). But it clearly involves a series of subjective, ad hoc judgments that are difficult to justify, not to mention to replicate.

Competitiveness among top parties. The most common approach to measuring electoral competition focuses on the size of the largest party (as a share of all votes or seats) or the difference between the two largest parties (e.g., Gerring, Palmer, Teorell, Zarecki 2015). The benefit of these approaches is that these indices are easy to calculate and to interpret. Because they require information about only one or two parties, information is readily available and data coverage is likely to be strong, whether the focus is on districts, regions, or countries. The disadvantage is that they take no notice of *changes* in party support. A polity (or district) in which two parties achieve nearly equal scores but one party always wins is scored the same as a country (or district) in which two parties alternate as the majority and minority party. Although it seems evident that electoral competition is greater in the second country (district), these indices do not reflect it.

Party-system competitiveness. A rather different approach to measuring competitiveness encompasses the entire party system, granting each party some weight in the resulting index. This approach enlists formulas that measure "fractionalization" (e.g., the Herfindahl index) or "effective parties" (Borman, Golder 2013). This approach intuitively captures how competitive a party system is in terms of the structure of the market for votes (the number of major competitors, the concentration or dispersion of vote share, etc.) but is at best orthogonal to electoral accountability, as discussed. One might also point out that party system competitiveness is largely a reflection of the electoral system, which means that this outcome is highly endogenous. Finally, as a practical matter, sources do not consistently provide vote and seat totals for very small parties so one cannot implement the party system approach in a comprehensive fashion.

Effective competition. A more nuanced approach incorporates all parties but with concern for the relative coherence of government and opposition forces – which also has the effect of giving extra weight to the size of the largest parties. In this vein, Altman & Pérez-Liñán (2002) develop an index of "effective competition" that is applied to eighteen Latin American polities from 1978 to 1996. This approach, however, is limited in empirical range because of the intensive data requirements.

Electoral risk. Kayser and Linstädt (2015) develop a measure of electoral risk, understood as the probability that the largest party in parliament might lose its plurality in the next election. This estimate is derived from past volatility in the party's vote share and the nature of the electoral system (specifically, the vote-seat elasticity). Because their measure makes sense only where parties are relatively stable entities they limit their sample to developed democracies after World War II. It is

not clear how this measure could be applied to countries and time-periods where parties are evanescent.

Volatility. Volatility is understood generally as the shift in votes or seats across parties from one election to the next (Mainwaring et al. 2017). High levels of volatility might conceivably strike fear in the hearts of politicians. However, it is not clear that it will increase electoral accountability, as we have pointed out. At high levels of volatility, where party systems are constantly churning – with new parties arising and old parties falling in every electoral cycle – voters will find it difficult to assign responsibility for public policies and party leaders will tend to adopt very short time-horizons (Hicken 2018).

II. Measuring Electoral Contestation

To craft a definition of electoral competition that satisfies the conceptual and empirical criteria laid out in the previous section we integrate three dimensions of the concept: *elections*, *competitiveness*, and *turnover*. The first element is the use of elections to choose top policymakers. We assume that a polity with no elections has zero electoral competition. While this might seem obvious, all extant indices that we are aware of are limited to electoral settings, leaving unmeasured those polities – or periods – without elections.

In situations where elections for top offices are held we measure competitiveness and turnover. Competitiveness refers to the closeness of the top parties to each other and turnover refers to a change in the pole position (the largest party). It is relevant not only how close an election is but whether or not the "winner" (understood as the largest party) changes.

These three factors – elections, competitiveness, and turnover – are normally measured separately, and for some purposes it may be useful to disaggregate. However, insofar as they describe different aspects of the same overall concept it makes sense to combine them in a single index (if this can be accomplished without loss of information). We describe the resulting index as an index of political *contestation*, differentiating it from indices of competitiveness and turnover, as well as from the larger concept of political competition (which of course can be measured in a variety of ways, as discussed).

At this point, we must define two specialized terms. The *previous winner* is understood as the party winning the most votes or seats in the previous election. (We avoid the term "incumbent" because this implies control over a particular office, which is often but not necessarily the case.) The *challenger* is the party (other than the previous winner) winning the most votes or seats in the current election.

The Contestation index is calculated as the share of votes or seats earned by the previous winner (p) in the current election minus the share of votes or seats obtained by the challenger (c) in the current election, subtracted from 100 (Equation 1). A value of 0 indicates the absence of contestation: there are no elections or the previous winner gains all the votes/seats. Values between 0 and 100 indicate that the previous winner is again the highest vote- or seat-getter, though they face competition from a challenger, with values nearer 100 signifying closer electoral contests. Values above 100 indicate turnover in the top position, i.e., the previous winner is bested by the challenger, again, with values nearer 100 representing greater competitiveness.

$$100 - (\text{Share}_p - \text{Share}_c) \qquad (1)$$

Where the previous winner drops out entirely, or falls below third place, we consider this an instance of party failure rather than of electoral contestation. Sometimes, party failure is a product of

political unrest or persecution. Sometimes, it is a product of political reorganization (indeed, a new party may contain many of the members of the old party). And sometimes, it is a product of a party that served as a vehicle for a particular candidate – who exits the political scene, leaving the party bereft of supporters. None of these scenarios conform to theoretical models of electoral accountability, where a degree of continuity among major parties is assumed. Thus, in those instances where the previous winner's vote share in the current election falls below the vote share of the third largest party, we treat the latter as the previous winner in our calculations. (We conduct robustness tests that exclude these observations, which are a very small portion of the sample.)

Our index thus focuses on the three largest parties. These parties, we assume, play a critical role in achieving electoral accountability and information about their performance is likely to be widely available.

To gain a better sense of how the index is calculated let us take a look at a few examples. In the 2010 Swedish parliamentary elections the incumbent Social Democrats won 30.7% of the vote and were able to hold on to their majority. The challenger, The Alliance, won 30.1%. Since there was no turnover in power the Contestation score is below 100. The Contestation score for the election is 100 – (30.7-30.1) = 99.4. Neighboring Finland had a turnover election in 2015. The Centre won 21.1% of the votes, a gain of 5.3 percentage points, and became the largest party in parliament. The National Coalition, previously the incumbent party, came in second with 18.2%. Since there was turnover the Contestation score is above 100: 100 – (18.2-21.1) = 102.9. Both elections were extremely close, our measure illustrates this closeness and additionally, the difference in whether or not there was turnover.[4]

Note that in a polity's first election, or the first election after an interregnum (caused by a seizure of power, a discontinuation of elections, a new constitution, foreign occupation, or some other mishap), turnover in the winning position is impossible. Consequently, "first" elections cannot receive a score above 100, though they are included in the dataset.

Where multiple elections for a single office (president or parliament) occur in a single year we record the *last* of these elections as the value for that year. Note that multiple elections are an infrequent occurrence. (Taking the *average* value across elections within that year has virtually no effect on our index or on any of the results reported below.)

We code all years *prior* to a polity's first election or during an *electoral interregnum* (when elections are interrupted or the elective body is prorogued) as zero (0), signaling an absence of electoral contestation. This coding is based on the Electoral regime ("elecrec") variables, calculated for legislative and presidential elections respectively, in the Varieties of Democracy (V-Dem) dataset (Coppedge et al. 2018).

Years *in between* elections are filled in with results from the previous election unless there is an electoral interregnum, as discussed. The assumption is that results from the last election characterize the state of contestation until the next election. (Those interested in using the Contestation index only for election years can omit non-election years from the dataset.)

This set of coding procedures may be applied to any elective body – collective (legislative) or unitary (presidential). Election results may be measured in votes (for legislative or presidential elections) or seats (for legislative elections). Accordingly, versions of the Contestation index are available for legislative and presidential elections separately. For the former, we measure the

[4] The elections in Serbia 2000 and Turkmenistan 2012 are on the extreme ends of the contestation scale. Serbia in 2000 has a score of 150.35. The Democratic Opposition of Serbia won 64% over the incumbent Socialist Party of Serbia's 13.7%. The calculation is 100-(13.7-64) = 150.3. The 2012 presidential election in Turkmenistan yields a score of 1.8. The president won with 97.4 percent and left 1% for his only competitor. This gives us a contestation score of 3.6 for the presidential elections. Since the parliamentary elections were not free and had a score of 0 the total contestation score for Turkmenistan in 2012 is then (3.6+0)/2 = 1.8.

outcome with votes and seats separately. (Presidential elections are measured solely with votes.) This provides an extensive dataset with disaggregated data that may be useful for certain purposes.

Since votes are informative across all elective bodies – while seats are informative only for bodies with multiple members – we choose votes for our core index, which combines results from legislative and presidential elections. In parliamentary systems, the value of this composite index is solely a product of legislative elections. In presidential systems, we count elections to both branches separately and combine them by taking the mean value. The assumption of equal weighting presumes that both elections are highly salient (even if not equally consequential), and thus relevant for understanding a polity's overall level of electoral contestation. We do not presume to judge the relative power of different branches, a feature that depends upon both formal powers and informal practices and is likely to change over time – a difficult measurement issue that lies orthogonal to our theoretical concerns (Shugart & Carey 1992). However, scholars who wish to assign different weights to each branch can do so using our data.

It should be pointed out that the resulting index refers to a party's *electoral* status, measured in votes or seats. This may or may not translate into control over the legislature or the executive. The largest party in the legislature may be shut out of power due to coalitional politics; very occasionally, the largest vote-getter in a presidential election does not obtain office (as in the US election in 2016). Our index registers electoral power not policymaking power, although we assume the two concepts are highly correlated. Note that the party with the most votes in a presidential election almost always wins the post, and the party with the most votes or seats in a parliamentary election is usually offered the opportunity of forming a government, where it will occupy the top post (prime minister).

It should also be pointed out that although the Contestation index is consistent with the overarching goal of electoral accountability it does not attempt to measure the totality of that diffuse concept (which is why we do not refer to it as an "accountability index"). Specifically, the Contestation index captures uncertainty in the pole position (the largest party), which may be understood as measure of the electorate's capacity to remove the incumbent. But it does not capture the ability of voters to identify who to credit or blame for policy outcomes. It does not therefore speak directly to the issue of identifiability.

Data

Our goal is to measure electoral contestation across all polities in the modern era, i.e., from 1789 to the present. Polities include formally sovereign countries and also defunct countries (e.g., German Democratic Republic), semisovereign territories (e.g., Bermuda), and colonies (e.g., Gold Coast).

Fortunately, national elections are high-profile events and election results are usually recorded in a number of places. It is important to bear in mind that these are *official* results, as posted by the government or electoral management body. They may, or may not, reflect the intentions of voters, not to mention the intentions of citizens who did not vote. Access to the ballot may be limited, access to polling places may be restricted, and election fraud and coercion may affect the officially posted results. Electoral contestation thus refers to the degree of contestation that governments are willing to permit, and to report. A government that suppresses contestation, e.g. by limiting the share of votes the opposition can receive or by restricting turnover, earns a lower score on our index. This seems appropriate given that electoral competition is unlikely to have any impact on electoral accountability if the government does not recognize or allow it.

Core data sources include Caramani (2000), Nohlen (2005), Nohlen, Grotz & Harmann (2002), Nohlen, Krennerich & Thibaut (1999), and Nohlen & Stover (2010). These are supplemented by online sources such as Wikipedia's election pages and the homepages of electoral

commissions and national parliaments. For some national elections, district-level results are also available. However, the largest district-level databases – the Constituency-Level Elections Archive [CLEA] (Kollman et al. 2011) and the Multi-level Elections Archive [MLEA] (Gerring et al. 2015) – do not have sufficiently broad polity and historical coverage. Consequently, we cannot use district-level databases to construct a suitable national-level database.

Sources (other than CLEA and MLEA) generally do not record election results for all parties. We collect results for the top three parties in each election (though even here data is not entirely complete). This data is collected for national elections to the lower chamber or unicameral chamber of the legislature and the presidency (if the head of state is directly elected). For each, we record the number of votes obtained by the top three contestants, and – for legislative elections – the number of seats. Contestants are identified by party if there is a party affiliation; otherwise, they are noted as independent. We also record the *total* number of votes and seats so that vote- and seat-shares can be calculated. With this data, we undertake to measure the level of contestation in legislative elections (based on votes or seats) and presidential elections (based on votes), as described above.

III. Comparisons

To understand a new measure of a concept it is often helpful to compare it with extant measures of the same or similar concepts. We focus on three sets of existing measures. First, as our primary touchstone, we compare our measure to two commonly employed formulas for electoral competitiveness. Second, we briefly examine how our measure compares to some of more complicated measures of electoral competition introduced above, for which data is available for a much smaller sample of countries and years. Finally, we compare our index of electoral contestation with indices of electoral democracy, a concept that hovers in the background of our discussion.

Competitiveness

The most common measures of political competition focus on the closeness of votes or seats among the largest parties. We refer to these formulas as indices of *competitiveness*.

The *largest-party* formula focuses on the vote- or seat-share of the largest party, subtracted from 100. This index varies, in principle, from 0 (monopolization of votes or seats by one party or candidate) to 99 (where the largest party or candidate wins an infinitesimal share of votes or seats).

The *top-two* formula is calculated as 100 minus the difference between the first and second place parties. The resulting measure ranges from 0 (where one party takes all the votes or seats) to 100 (where two parties tie).

Table 1 illustrates how these formulas compare to our Contestation index by looking at a set of hypothetical electoral outcomes and the scores each measure would produce. All three formulas identify Election #1 as the least competitive. By contrast, the elections with the greatest competition are different across the three measures. Under the largest-party measure, Election #5 has the highest level of competition. Elections #2 and #3 are the most competitive under the top two measure, while Election #3 has the highest level of competition with the Contestation index. Another advantage of Contestation is apparent when we compare Elections #2 and #3. The first two measures give us no way to distinguish between these two profiles. However, the Contestation index takes into account that there is turnover in which party is the largest vote-getter in profiles 3 & 5, reflecting scores above 100. Intuitively, we feel that the Contestation index better captures the underlying concept of political competition.

Table 1: **Three Formulas of Electoral Competition Illustrated**

			Electoral competition, variously measured…		
Election	*Parties*	*Shares*	**Competitiveness: Largest Party** 100-A	**Competitiveness: Top Two** 100-(A-B)	**Contestation** 100-(PW-Ch)
1.	**A** (PW) **B** (Ch) **C**	80% 15 05	20	35	35
2.	**A** (PW) **B** (Ch)	51 49	49	98	98
3.	**A** (Ch) **B** (PW)	51 49	49	98	102
4.	**A** (PW) **B** (Ch) **C**	51 25 24	49	74	74
5.	**A** (Ch) **B** (PW) **C**	35 30 25	65	95	105

Note: Five hypothetical election scenarios in a three-party system, showing vote (or seat) shares for each party (*A*, *B*, *C*) in that election and the coding they would receive according to three formulas. *PW* = previous winner (the largest party in the previous election). *Ch* = challenger (the party other than *PW* with the most votes).

These three formulas may be applied to different outcomes (legislative and presidential votes, legislative votes, and legislative seats), following the data and coding procedures described in the previous section. This generates a typology with at least nine possible indices of competition, as shown in Table 2, panel (a). We omit the purely presidential index as it applies only to countries with presidential systems, a small and unrepresentative sub-sample of the world. Our preferred index – the Contestation index applied to legislative and presidential votes – is listed as the first option (#1).

Panel (b) in Table 2 displays descriptive statistics for each of these indices. All measures contain a mode at zero, representing a non-electoral period (before elections are established or during which elections are suspended) or an election in which the largest party or previous winner gains all the votes or seats.

As the table indicates, slightly more data is available for seats than for votes, and more data is available for the largest-party formula than the other formulas, which require information for two or three parties rather than just one. However, the differences in coverage are slight. These six measures of electoral competition encompass 192-194 polities, ~3,000 elections and ~36,000 polity-year observations. This is a more extensive sample than is available from any extant measure of politics or political institutions. Extensive coverage is possible because we focus on the performance of the largest parties, because our measures extend to semisovereign units such as colonies (extant indices are generally limited to sovereign units), and because we recognize instances of zero competition (including nonelectoral regimes). A full list of countries and years in our dataset is

contained in Table A4. (Readers should bear in mind that samples are smaller in some of the analyses that follow due to missing data for the outcome or for relevant covariates.)

Table 2: Nine Indices of Electoral Competition

	Legislative/ presidential votes	Legislative votes	Legislative Seats
Contestation	**1**	**2**	**3**
Competitiveness: Largest-party	**4**	**5**	**6**
Competitiveness: Top-two	**7**	**8**	**9**

(a) Typology: 3 formulas applied to 3 electoral outcomes, producing 9 indices

	Polities	*Elections*	*Observations*	*Mean*	*Std dev*	*Zeroes (%)*	*Max*
1	194	2,921	35,814	23	38	71	183
2	192	2,834	34,812	22	38	73	183
3	194	3,179	36,585	23	39	70	200
4	194	2,978	36,198	14	24	70	94
5	192	2,868	35,005	14	25	73	94
6	194	3,224	36,867	14	24	70	100
7	194	2,960	36,038	22	36	71	125
8	192	2,868	35,005	22	37	73	125
9	194	3,185	36,660	22	35	70	100

(b) Descriptive statistics for the 9 indices (numbers rounded to nearest integer)

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	1								
2	0.99	1							
3	0.94	0.95	1						
4	0.95	0.95	0.87	1					
5	0.95	0.96	0.89	0.99	1				
6	0.88	0.89	0.91	0.90	0.92	1			
7	0.98	0.97	0.90	0.97	0.97	0.88	1		
8	0.97	0.97	0.90	0.97	0.97	0.90	0.99	1	
9	0.91	0.92	0.94	0.91	0.92	0.97	0.93	0.93	1

(c) Intercorrelations (Pearson's r)

	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
1	1								
2	0.95	1							
3	0.77	0.81	1						
4	0.76	0.70	0.49	1					
5	0.68	0.73	0.51	0.93	1				
6	0.49	0.54	0.67	0.61	0.70	1			
7	0.86	0.79	0.54	0.88	0.82	0.52	1		
8	0.78	0.83	0.57	0.83	0.87	0.58	0.95	1	
9	0.58	0.61	0.75	0.61	0.65	0.91	0.64	0.68	1

(d) Intercorrelations (Pearson's r) – zero values excluded

Panel (c) in Table 2 displays a correlation table, showing how closely the nine indices track each other. A principal component analysis, shown in Table A3, demonstrates that nearly all of the variance (0.95) is contained in the first component, suggesting that these nine indices are measuring the same underlying latent trait. However, when zero scores are excluded (i.e., we only include multi-candidate/party elections), scores differ appreciably across the indices, as shown in panel (d).

Other indices of electoral competition

Other measures of electoral competition are not available for such a broad sample of countries and years. Nonetheless, it may be interesting to see how they compare empirically to the Contestation index.

In Table 3, we examine the rest of the indices introduced in Section I, including the outcomes they measure, their coverage, and their correlation with our index. We use whatever measure of contestation most closely corresponds to their chosen outcome; for example, if another index focuses exclusively on legislative elections measured with seat-shares we use the Contestation index focused on the same outcomes. Data for these indices is drawn directly from the cited studies and thus covers varying samples.

We see that contestation is strongly correlated with measures of competitiveness or "effective competition" that privilege the status of the largest parties and weakly correlated with measures that encompass the entire party system, and with indices of electoral risk and volatility.

This underscores our contention that issues of conceptualization and measurement are likely to be critical to any conclusions that scholars might draw about the causes or effects of electoral competition – a point taken up explicitly in Section V.

Table 3: **Additional Indices of Electoral Competition**

Measure	*Source*	*Outcome*	*Polities*	*Elections*	*Obs*	*Pearson's r*
Competitiveness: largest party, with adjustments	Vanhanen 2000	Leg & Prez votes	169	2,343	12,709	0.80
Effective competition: weighted by party size	Altman, Pérez-Liñán 2002	Leg seats	21	178	567	0.71
Electoral risk: top party	Kayser, Lindstädt. 2015	Leg votes	21	212	672	0.46
Competitiveness: party system ("effective parties")	Borman, Golder 2013	Leg seats	124	1,168	1,246	0.11
Volatility: party system	Mainwaring et al. 2017	Leg seats	142	1,054	1,157	0.15

Extant indices of electoral competition, the outcomes they measure, their coverage, and their correlation with our Contestation index.

Democracy

Our ambition is to measure electoral contestation – not the larger, more diffuse concept of electoral democracy. Nonetheless, the two concepts are closely related so it is worth reviewing this conceptual and empirical relationship before continuing.

Our Contestation index necessarily reflects the freeness/fairness of an election. If one party buys votes on a massive scale, imprisons opposition leaders, monopolizes sources of campaign finance and access to the media, or simply prevents other parties from appearing on the ballot, that election is likely to receive a lower score. All competition indices may be regarded as outcome-based measures of electoral democracy in this sense (Altman & Pérez-Liñán 2002). The Contestation index

presumes that electoral manipulation is most likely to be carried out by the incumbent, understood as the plurality winner in the previous election. In this respect, it privileges turnover, a key element of many electoral democracy indices.

However, contestation is an imperfect measure of democracy. Sometimes, incumbents win big even though the rules of the game are fair (e.g., Lyndon Johnson in the US presidential election of 1964). Sometimes, incumbents lose even though the rules of the game are unfair (e.g., Malaysia in 2018). Our Contestation index takes no notice of suffrage restrictions or informal limits on participation. Needless to say, it also does not reflect dimensions of democracy that are non-electoral in character, e.g., judicial independence, rule of law, civil liberty, horizontal accountability, the strength of civil society, et al.

To shed light on the empirical relationship between contestation and democracy we present a series of Pearson's r correlations in Table 4. The first set of comparisons involve prominent indices of electoral democracy – the Polyarchy (aka Electoral democracy) index from the Varieties of Democracy project (Teorell et al. 2016), the Polity2 index from the Polity IV project (Marshall et al. 2014), the Lexical index of electoral democracy (Skaaning et al. 2015), and the BMR index from Boix, Miller & Rosato (2013). The second set of comparisons focus on specific components of democracy – clean elections, party institutionalization, liberal freedoms, participation, and equality – as measured by the Variety of Democracy dataset (Coppedge et al. 2018).

The full sample comparisons include country-years in which there is no contestation (Contestation=0). In the second column, we restrict the comparisons to country-years in which there are elections and the winner of the previous election does not capture all of the votes. Readers will see that correlations are fairly strong in the full sample but drop considerably in the restricted sample. This suggests that a judgment of no contestation accords with a judgment of no (or very little) democracy: multi-party elections, after all, are commonly viewed as a sine qua non of democracy. However, where multi-party elections are allowed, degrees of contestation do not always accord with degrees of electoral democracy as measured by indices of the latter. Correlations between these democracy measures and other indices of competition are similar with the notable exception of Vanhanen's index, which involves additional coder judgments and is thus not based entirely on electoral performance, as noted.

In summary, electoral contestation is rightly regarded as an element of democracy. However, there are additional elements that an index of electoral contestation does not capture and – given our reliance on observable outcomes – cannot capture.

Table 4: **Contestation and Democracy**

	Contestation	
Sample:	Full	~~0's~~
Electoral democracy indices		
Polyarchy (V-Dem)	0.80	0.48
Polity2 (Polity IV)	0.73	0.54
Lexical (Skaaning et al.)	0.79	0.48
BMR (Boix et al.)	0.69	0.50
Democracy components		
Clean elections (V-Dem)	0.84	0.50
Party institutionalization (V-Dem)	0.52	0.38
Liberal (V-Dem)	0.66	0.52
Participatory (V-Dem)	0.74	0.48

Note: Pearson's r correlation between contestation and various democracy indices and democracy components, tested in a full sample and a sample excluding zero contestation scores.

IV. Patterns of Contestation

Having introduced an index of electoral contestation (Section II) and compared it with other indices (Section III), we turn to the empirical record. What patterns of contestation obtain across polities and through time?

We shall focus on the core Contestation index (option #1 in Table 2), though most of these patterns are similar across other measures. Of particular interest is the dispersion of election results during periods in which national elections are on course, i.e., excluding polities that have held no national elections as well as years prior to the first election in a polity and years in which the electoral system was interrupted (e.g., by a coup or foreign occupation). Polity-year data is displayed as a histogram in Figure 1, where the *Y* axis is percent and the *X* axis is our index of electoral contestation, divided into 5-point increments.

The resulting curve is strongly bimodal. The first mode at 0-5, comprising roughly 9% of all polity-years, represents a setting in which the winner gains all, or nearly all, of the votes. This may be regarded as strong prima facie evidence of autocracy.

To the right of the first mode we find a substantial dropoff in frequency. It is uncommon for the previous winner-challenger differential to fall between 40 and 95% of the vote (5-60 on our index of electoral contestation). We interpret this to mean that where multi-party competition is allowed, huge wins for the previous winner are rare.

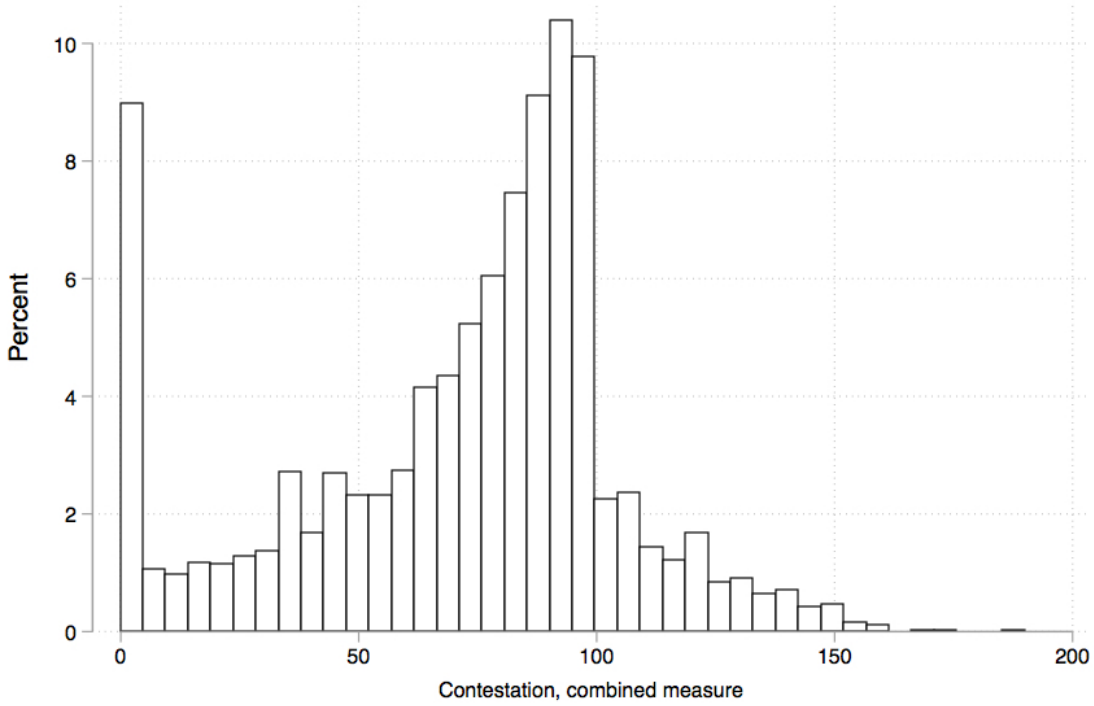
Most of the electoral outcomes fall between 60 and 100 on our index, representing situations where the previous winner-challenger differential is between 0 and 40. The three highest bars, including nearly 30% of all the data points, represent situations in which the previous winner narrowly retains its plurality status, winning up to 15% more votes than the next largest challenger.

After 100, we find a dramatic fall in frequency. Note that a score of 100-110 represents a narrow loss for the winner and a probable shift in control over the executive. There are two possible

interpretations of the non-symmetrical distribution around 100. One might surmise that winning parties are catering to their core constituencies, following a minimal-winning strategy (Riker 1962) and thereby eking out narrow victories. Alternatively, or additionally, one might surmise that winning parties are manipulating the electoral process just enough to stay in power. In any case, it bears emphasis that narrow wins for the winner are *much* more common than narrow losses. The distribution of outcomes around 100 is far from random (which should give pause to anyone wishing to use election outcomes as devices for a regression discontinuity design).

A final aspect of the histogram that deserves emphasis is the extremely thin right tail. Big losses for the previous winner are the rarest of all possible outcomes. This, too, is open to varying interpretations. It might be an indication of the stability of party ties. Since incumbents are likely to be entrenched in the electorate, it would be surprising if their support collapsed all of a sudden (from one election to the next). It might also be an indication of the advantages of incumbency, which serves as ballast even in contrary electoral tides.

Figure 1: **Histogram of Contestation**

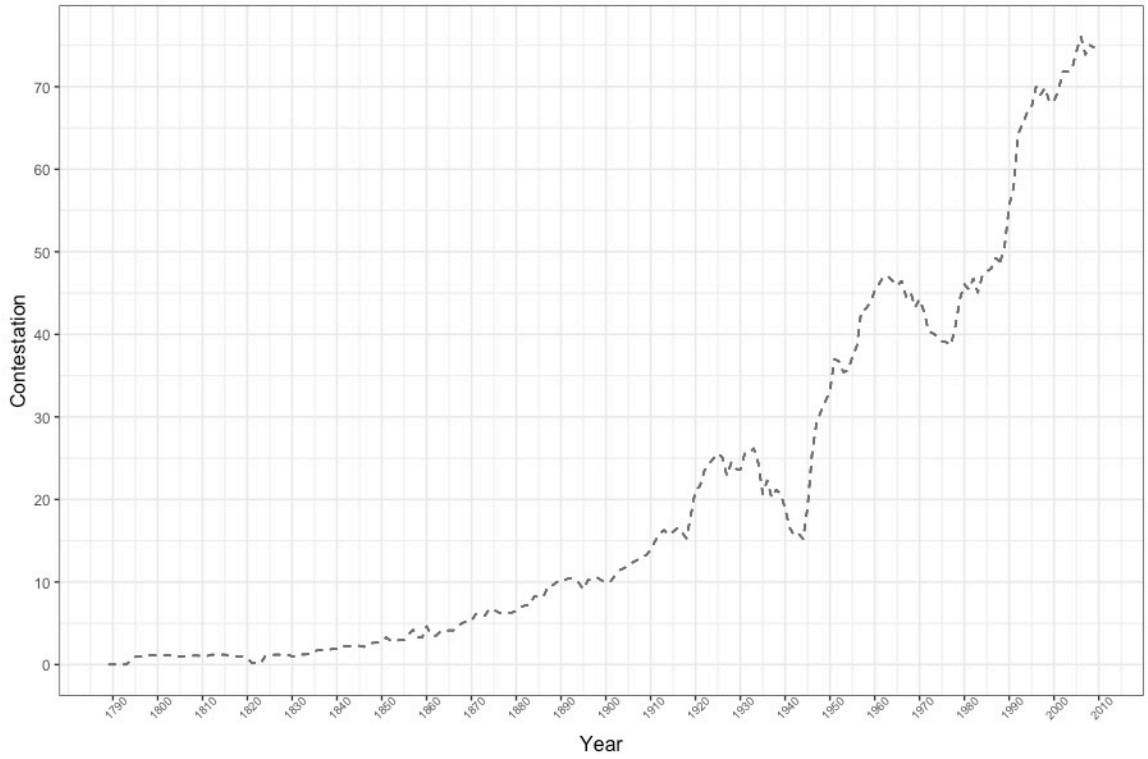


Note: Histogram of the Contestation index (combining presidential and legislative votes), excluding years prior to a polity's first election or interregnums when elections are discontinued.

To get a sense of how contestation varies over time, we graph the mean value of our index across all available polity-years from 1789 to the present. The long-term pattern depicted in Figure 2 demonstrates that contestation has increased dramatically from the turn of the nineteenth century to the turn of the twenty-first century. Two significant reversals are apparent: the first associated with

the fascist era in the 1940s, the second with collapse of new democracies in the 1960s prior to the beginning of the third wave of democratization in the mid-1970s.

Figure 2: **Contestation through Time**

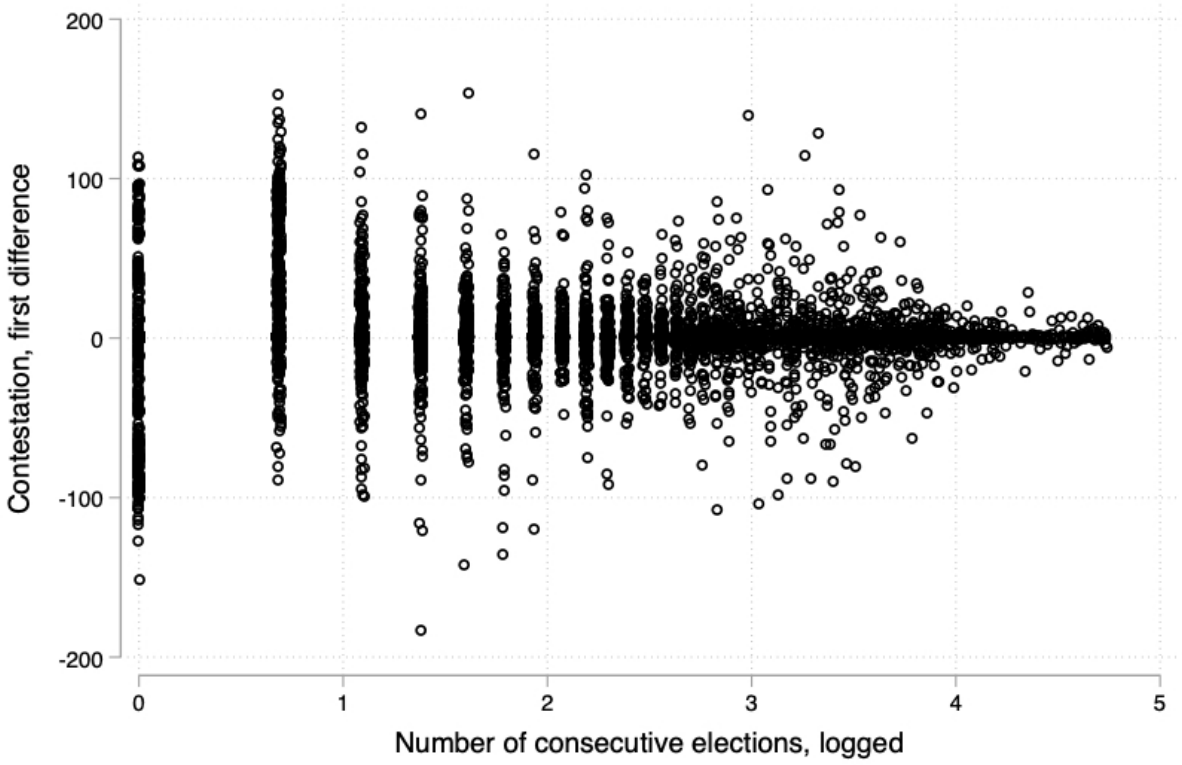


Note: Contestation index, calculated as the global yearly mean across all polities for which data is available.

Leaving aside global patterns, we turn to polity-specific patterns. One may suspect that for any given polity there exists an equilibrium – a level of contestation that is normal for that polity, given its structural endowments (whatever relatively fixed factors affect contestation). Accordingly, over time, as a polity gains experience with elections, one would expect election-to-election variation in contestation to moderate. Players (both masses and elites) should learn the rules of the game and solve their coordination problems. Likewise, one would expect the rules of the game, including electoral system laws, to stabilize.

To test this proposition, we graph year-to-year volatility in contestation (the first-difference of the Contestation index) against the number of years a polity has held uninterrupted elections, transformed by the natural logarithm. Figure 3 supports the hypothesis of increasing institutionalization, with polities converging on a polity-level mean. This is confirmed by a statistical analysis in which the first-difference of contestation is regressed against the number of consecutive elections (log) along with Contestation (lagged), polity dummies, and year dummies, shown in Table B1 in the appendix.

Figure 3: **Contestation Volatility**



Note: Y axis: contestation volatility, measured as the first-difference of the Contestation index. *X* axis: number of consecutive (uninterrupted) legislative elections, transformed by the natural logarithm.

V. Contestation and Government Consumption

To provide a preliminary test of the utility of the Contestation index we explore a theoretical question that has garnered significant attention from scholars over the past several decades: the impact of electoral competition on fiscal policy, as measured by government spending.

It is well established that democracies spend more than autocracies (Boix 2001; Brown, Hunter 1999; Huber, Mustillo, Stephens, 2008; Lee 2005). However, democracy cannot be equated with contestation, as demonstrated in Section III. Thus, we cannot assume that the relationship between democracy and spending holds for contestation.

To conceptualize the relationship between contestation (*C*) and government consumption we shall assume that parties may reward supporters through particularized benefits (targeted on their supporters) or public goods (available to everyone). Where contestation is very low ($C<20$), the governing party is likely to lean more heavily on the former, following a clientelistic approach to public outlays. This should result in a high level of government consumption. Where contestation is moderate – i.e., the previous winner retains its position but faces a strong challenger ($C\sim90$) – we expect that expenditures will tilt toward public goods and that outlays for government consumption will attenuate. And where, finally, contestation is very high – i.e., where the previous winner is displaced by a new winner ($C>100$) – we expect the newly ascendant party to be in a position to

reward its supporters with one-time payments of a targeted nature, leading to a short-term increase in government consumption. Thus, we hypothesize that government consumption responds in a non-monotonic fashion to changes in contestation – first decreasing, and then increasing, generating a U-shaped pattern.

Extant work on this question has measured political competition by the size of the largest party, the differential between the two largest parties, or party fractionalization in the legislature. So operationalized, many studies find no – or a very weak – relationship between electoral competition and spending (Alt 1970; Besley, Case 2003; Boyne 1998; Chhibber, Nooruddin 2004; Cleary 2007; Danziger 1978; Hoggart 1985; Karran 1982; Stonecash 1987). A few studies find a positive relationship (Hecock 2006; Saez, Sinha 2010), and a few find a negative relationship (Boulding, Brown 2014; Rogers, Rogers 2000). Others report mixed results.[5] Evidently, a consensus has yet to emerge from this trajectory of research.

Our approach differs from this body of research in several respects. First, while extant studies focus almost exclusively on subnational units (municipalities or regional governments) we focus on national units (countries). Second, and perhaps more importantly, to measure competition we incorporate not only the closeness of the vote but also the existence of turnover in the top position, as explained in Section II.

Tests

As measure of fiscal policy we focus on general government final consumption expenditure. This reflects all government current expenditures for purchases of goods and services including compensation of employees, public services like education, police, and infrastructure, and most expenditures on national defense and security (excluding military expenditures that are part of government capital formation). Relative to other national measures of government expenditure, consumption offers much more extensive data coverage including over 170 countries and a panel that extends back to 1960. Of course, it would be nice to have data that extends further back in time in order to exploit our extensive time-series for electoral contestation. However, fiscal policy is not an easy thing to measure historically and most time-series begin in 1950 or 1960.

Importantly, government consumption does not include transfer payments, e.g., for social security or income support, and thus excludes a large portion of government fiscal activity (World Bank 2018).[6] We should not confuse consumption spending with the total size of government budgets or with the concept of public goods. Indeed, a good portion of government consumption may be properly labeled as clientelistic, i.e., targeted payoffs to supporters. For this reason, we surmise that government consumption is likely to be especially responsive to electoral pressures – moreso than other categories of government spending. Note also that, unlike transfer payments, consumption is generally not constrained by statutory obligations and thus constitutes a "discretionary" portion of the government budget.

Data for government consumption, drawn from the World Development Indicators (World Bank 2018), is considered as a share of GDP and transformed by the natural logarithm. To probe

[5] For example, Chhibber and Noorudin (2004) examine Indian states from 1967 to 1997, finding a mixed relationship between public spending and the number of parties in the legislature and no relationship when contestation is operationalized as the electoral differential between winning parties. In some studies, results seem to be contingent upon the nature of the parties, exemplifying asymmetric effects. In a study of 500 Spanish local governments over two electoral cycles Solé-Ollé (2006) finds that left-wing governments increase spending as the electoral margin increases while right-wing governments decrease spending as the margin of victory increases.

[6] For further discussion see US Bureau of Economic Analysis (2018: ch 9).

the relationship between contestation and consumption we offer series of tests, presented in Table 5.

As a point of departure, we adopt a monotonic functional form. In Model 1, consumption is regressed against contestation along with country and year fixed-effects in an ordinary least squares model where standard errors are clustered by country (to offset potential serial autocorrelation) and right-side variables are measured one year prior to the outcome. The coefficient on contestation is negative, but not differentiable from zero.

In Model 2, we test the possibility of a curvilinear relationship by entering contestation along with its quadratic. Here, we find a highly significant relationship in which spending diminishes first, and then grows, as contestation increases. The predicted values from this model are graphed in Figure 4, revealing an inflection point at about 90. In other words, as contestation increases from zero to ninety, government consumption declines; after this point, consumption begins to increase. Note that the point of "turnover" – where a challenger displaces the previous winner – is at 100, so it is these turnover elections that generate the upward spike in spending at the tail end of the curve. Subsequent tests probe the robustness of this relationship.

Model 3 adds several covariates that are often regarded as drivers of government spending: population (transformed by the natural logarithm), population over the age of 65 (as a share of total population), per capita GDP (transformed by the natural logarithm), and democracy (measured by the Polyarchy index from the Varieties of Democracy project). Definitions, sources, and descriptive statistics for all variables are included in Appendix A. We regard this as a benchmark specification, though it should be noted that the estimated coefficient for contestation and its quadratic is very close to the minimal specification in Model 2.

Model 4 adds another set of plausible covariates including election year (a dummy indicating whether a national election occurs in a particular year), elections (a running count of the number of elections that have occurred in a country), party institutionalization (an index provided by the Varieties of Democracy project), turnout (share of electorate that votes in each election), internal conflict, civil war, and oil income per capita.

Model 5 returns to the benchmark specification, adding a lagged dependent variable. While the coefficient estimate for contestation and its quadratic is reduced, it is important to bear in mind that a lagged DV model registers only short-term impacts. The long-term impact is comparable to the benchmark model.

Model 6 offers a cross-sectional (rather than fixed-effect) analysis. Here, we build on the "full" specification in Model 4, replacing country dummies with a series of static covariates including English colony (a dummy indicating whether a country is a former colony), Protestants (share of population with a Protestant heritage), and a panel of regional dummies (Western Europe & North America, Latin America, etc.).

Model 7 returns to the benchmark (fixed-effect) specification, this time with a linear (rather than logarithmic) measure of consumption on the left side of the model.

Model 8 is limited to country-years where elections are on course – removing cases like Saudi Arabia and China from the sample. Model 9 is limited to country-years where multi-party elections are on course for both the legislature and executive (Lexical index of democracy > 2), eliminating a larger set of cases (roughly 1/5 of the sample).

Table 5: Contestation and Government Consumption

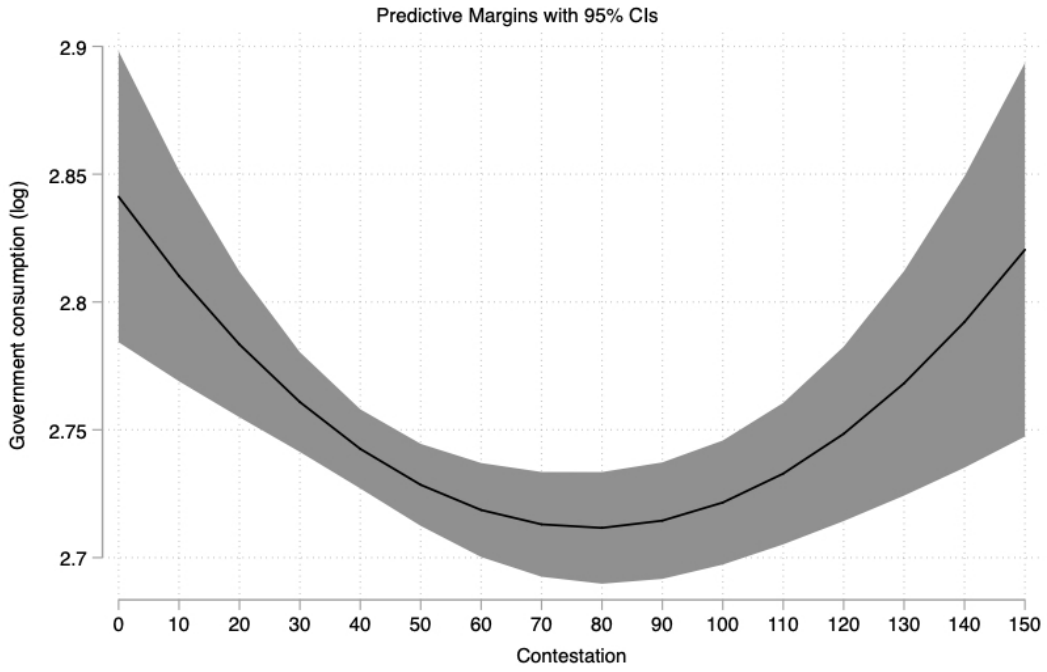
Sample	Full	Full	Full	Full	Full	Full	Full	Elections in place	Multiparty elections
Outcome	Log	Log	Log	Log	Log	Log	Linear	Log	Log
Model	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Contestation	-0.000	-0.003***	-0.003***	-0.004***	-0.001***	-0.003**	-0.054***	-0.005***	-0.004**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.000)	(0.001)	(0.015)	(0.001)	(0.002)
Contestation²		0.000***	0.000***	0.000***	0.000***	0.000**	0.000***	0.000***	0.000**
		(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Population (log)			-0.068	-0.131	0.008	-0.0523**	-1.453	-0.060	-0.052
			(0.052)	(0.120)	(0.011)	(0.022)	(1.209)	(0.041)	(0.040)
Population 65+			0.026***	0.023*	0.004***	0.025*	0.507***	0.026***	0.022***
			(0.008)	(0.012)	(0.002)	(0.013)	(0.146)	(0.008)	(0.006)
GDPpc (log)			-0.039	-0.022	0.009	0.055	-1.177	-0.054	-0.057
			(0.054)	(0.085)	(0.008)	(0.049)	(0.815)	(0.047)	(0.037)
Polyarchy			0.332***	0.312***	0.047**	0.206	4.674***	0.327***	0.298***
			(0.092)	(0.115)	(0.020)	(0.145)	(1.581)	(0.104)	(0.107)
Election year				0.001		-0.006			
				(0.006)		(0.011)			
Elections (*N*)				-0.021*		0.002**			
				(0.012)		(0.001)			
Party institutionaliz				-0.241*		0.027			
				(0.122)		(0.124)			
Turnout				-0.001		0.002			
				(0.001)		(0.001)			
Internal conflict				0.098***		0.168***			
				(0.034)		(0.056)			
Civil war				0.089*		0.052			
				(0.046)		(0.053)			
Oil income pc				-0.000**		-0.000**			
				(0.000)		(0.000)			
Lagged DV					0.834***				
					(0.013)				
English colony						0.070			
						(0.058)			
Protestant						0.001			
						(0.001)			
Electoral system dummies						✓			
Region dummies						✓			
Year dummies	✓	✓	✓	✓	✓	✓	✓	✓	✓
Country dummies	✓	✓	✓	✓	✓		✓	✓	✓
Countries	179	179	164	124	164	124	164	152	148
Years	57	57	55	47	55	47	55	55	55
Observations	7,267	7,267	6,568	3,712	6,492	3,712	6,568	5,580	4,694
R-squared	0.0648	0.0758	0.116	0.145	0.751	0.358	0.110	0.136	0.168

Outcome: government consumption (log). *Unit of analysis:* country-year. Right-side variables lagged one year. *Estimator:* ordinary least squares. Country clustered standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

All of these tests indicate a curvilinear relationship between contestation and government spending. Coefficient estimates for the quadratic term are quite similar, except in instances where there is a lagged DV (Model 5) or a linear outcome (Model 7), as would be expected.

Further robustness tests are contained in Appendix B. In Table B2, we investigate different lags. This reveals that the contestation quadratic term is robust when lagged up to five years behind the outcome but is not a robust predictor of government consumption when forward lagged, relieving fears of endogeneity between the right and left sides of the causal model.

Figure 4: **Predicted Values of Government Consumption as Contestation Increases**



Predicted values of government consumption (log) as contestation increases, surrounded by 95% confidence intervals, based on Model 3, Table 5.

Table 6 explores alternate measures of electoral competition, as laid out in Section III, in order to probe their relationship to government consumption. We focus our attention on indices with broad country coverage so that samples are large, comparable to each other, and representative of the global population of interest. We exclude Vanhanen's index as it replicates our largest-party index and also muddies the water with some (unknown) number of subjective codings that depart from the factual, election-based nature of other indices. This leaves four indices of electoral competition: *largest party* (authors), *top-two parties* (authors), *effective parties* (Borman, Golder 2013), and *volatility* (Mainwaring, Gervasoni, Najera 2017). The first two are generated by the authors and the latter are drawn directly from the cited publications – filling in missing data in between elections with the codings registered for the last election, unless there has been an electoral interruption.

To test the relationship of these alternate indices of electoral competition to government consumption we begin with a simple, monotonic functional form. In specifications 1 and 2,

consumption is regressed against each alternate index (seriatim) along with various covariates employed in tests contained in Table 5. Specification 1 is regarded as the benchmark and specification 2 as the "full" specification. Specifications 3 and 4 repeat these analyses, this time with the addition of a quadratic, to test for a curvilinear relationship between electoral competition and consumption.

Indices of competitiveness that focus on the largest party or the top-two parties show broadly similar results to those contained in Table 5. When tested in the monotonic functional form, there appears to be a negative relationship between competition and consumption. When tested in a quadratic functional form, there appears to be a "U-shaped" relationship. However, these relationships are neither as strong nor as robust as those reported in Table 5. This is presumably because indices of competitiveness do not distinguish elections in which the previous winner is victorious from elections in which the previous winner is displaced by a challenger. All that matters is the closeness of the outcome (competitiveness).

By contrast, indices focused on the entire party system – effective parties or volatility – do not appear to have a relationship to government consumption at all. This is no surprise, as they are measuring rather different concepts and are not highly correlated with contestation, as measured by our index (Table 2). Again, this reinforces our argument that issues of conceptualization and measurement are critical to ascertaining relationships that may exist between electoral competition and outcomes of theoretical interest such as consumption.

Table 6: **Alternate Measures of Competition and Government Consumption**

Specification	**1**	**2**	**3**	**4**
Largest party	-0.001**	-0.001	-0.004**	-0.004
	(0.001)	(0.001)	(0.002)	(0.003)
Largest party²			0.000*	0.000
			(0.000)	(0.000)
Top-two parties	-0.001***	-0.001*	-0.003**	-0.003
	(0.000)	(0.001)	(0.001)	(0.002)
Top-two parties²			0.000	0.000
			(0.000)	(0.000)
Effective parties	-0.000	0.000	0.004	0.006
(Borman, Golder 2013)	(0.000)	(0.000)	(0.007)	(0.008)
Effective parties²			0.000	0.000
			(0.000)	(0.000)
Volatility	0.001*	0.001	0.002	0.001
(Mainwaring et al. 2017)	(0.000)	(0.000)	(0.001)	(0.001)
Volatility²			-0.000	-0.000
			(0.000)	(0.000)
Benchmark covariates	✓	✓	✓	✓
Additional covariates		✓		✓
Year dummies	✓	✓	✓	✓
Country dummies	✓	✓	✓	✓

Outcome: government consumption (log). Results shown only for variables of theoretical interest. *Benchmark covariates:* population (log), population 65+ (%), GDPpc (log), Polyarchy. *Additional covariates:* Election year (dummy), elections (N), party institutionalization index, turnout, internal conflict, civil war, oil income per capita. *Unit of analysis:* country-year. Right-side variables lagged one year. *Estimator:* ordinary least squares. Country clustered standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.10

VI. Discussion

In this study, we introduce a new index of electoral competition intended to unite several dimensions usually measured separately – elections, competitiveness, and turnover – and to be consistent with the ideal of electoral accountability. We describe the resulting variable as a *contestation* index.

It should be clear that we are not attempting to replace other indices, whether focused on competitiveness, effective parties, volatility, or some other concept. Rather, we are making the case for the addition of a new index, one that has integrative properties.

This measure is applied to polities from 1789 (or year of independence) to the present, producing a comprehensive dataset of electoral contestation extending to nearly 36,000 polity-year observations – a significant advance over existing indices. We reiterate that contestation is not a proxy for accountability or democracy but nonetheless constitutes an important dimension of those nebulous concepts.

Readers may wonder what other functions an index of contestation might perform. A wealth of theoretical studies, referenced at the outset, suggest that electoral competition fosters better governance. However, these studies focus almost exclusively at subnational levels – at regions or electoral districts. It remains to be seen whether competition has a positive impact on governance at national levels. In this paper, we have shown that our measure of contestation provides traction in explaining through-time variance in government consumption, which follows a curvilinear response pattern. As contestation increases, spending first decreases and then increases as a country reaches the point at which the challenger surpasses the previous winner. We leave it to future studies to explore the implications of contestation for other outcomes.

VII. References

Alt, James. 1971. "Some Social and Political Correlates of County Borough Expenditures." *British Journal of Political Science* 1, 49-62;

Altman, David, Anibal Pérez-Liñán. 2002. "Assessing the Quality of Democracy: Freedom, Competitiveness and Participation in Eighteen Latin American Countries." *Democratization* 9:2, 85-100, DOI: 10.1080/714000256

Ansolabehere, Stephen, James M. Snyder, Jr., Charles Stewart, III. 2001. "Candidate Positioning in U.S. House Elections." *American Journal of Political Science* 45:1 (January) 136-59.

Arce, Moisés, Jorge Mangonnet. 2013. "Competitiveness, Partisanship, and Subnational Protest in Argentina." *Comparative Political Studies* 46, 895-919.

Bardhan, Pranab, Tsung-Tao Yang. 2004. "Political Competition in Economic Perspective." BREAD Working Paper No. 078, Bureau for Research in Economic Analysis of Development.

Barro, Robert J. 1973. "The Control of Politicians: An Economic Model." *Public Choice*, *14*, 19–42.

Bartolini, Stefano. 1999. "Collusion, competition and democracy: Part I." *Journal of theoretical politics* 11.4: 435-470.

Bartolini, Stefano. 2000. "Collusion, competition and democracy: Part II." *Journal of theoretical politics* 12.1: 33-65.

Becker, Gary S. 1958. "Competition and Democracy." *Journal of Law and Economics* 1, 105-9.

Beer, Caroline, Neil J. Mitchell. 2004. "Democracy and Human Rights in the Mexican States: Elections or Social Capital?" *International Studies Quarterly* 4:8 (June) 293- 312.

Berkowitz, Daniel, Karen B. Clay. 2012. *The Evolution of a Nation: How Geography and Law Shaped the American States*. Princeton: Princeton University Press.

Besley, Timothy, Anne Case. 2003. "Political institutions and policy choices: Evidence from the United States." *Journal of Economic Literature, 41*(1), 7–73.

Besley, Timothy, Torsten Persson, Daniel M. Sturm. 2010. "Political Competition and Economic Performance: Evidence from the United States." *Review of Economic Studies* 77:3, 1329-52.

Boix, Carles, Michael Miller, Sebastian Rosato. 2013. "A complete data set of political regimes, 1800–2007." *Comparative Political Studies* 46.12: 1523-1554.

Boix, Carles. 2001. "Democracy, development and the public sector." *American Journal of Political Science*, 45(1), 1-17.

Borges, André. 2008. "State Government, Political Competition and Education Reform: Comparative Lessons from Brazil." *Bulletin of Latin American Research* 27:2, 235-54.

Bormann, Nils-Christian, Matt Golder. 2013. "Democratic Electoral Systems Around the World, 1946-2011." *Electoral Studies* 32: 360-369.

Boulding, Carew, David S. Brown. 2014. "Political competition and local social spending: evidence from Brazil." *Studies in Comparative International Development* 49:2, 197-216.

Boyne, George A. 1988. "Party competition and local spending decisions." *British Journal of Political Science* 28.1: 185-222.

Brown, David, Wendy Hunter. 1999. "Democracy and social spending in Latin America, 1980–1992." *American Political Science Review*, 93(4), 779–790.

Brunell, Thomas L., Justin Buchler. 2009. "Ideological representation and competitive congressional elections." *Electoral Studies* 28.3: 448-457.

Brunell, Thosmas L. 2008. *Redistricting and Representation: Why Competitive Elections are Bad for America*. New York: Routledge.

Buchler, Justin. 2005. "Competition, representation and redistricting: the case against competitive congressional districts." *Journal of Theoretical Politics* 17.4: 431-463.

Buchler, Justin. 2011. *Hiring and firing public officials: Rethinking the purpose of elections*. Oxford University Press.

Caramani, Daniele. 2000. *Elections in Western Europe since 1815: electoral results by constituencies*. Macmillan.

Chhibber Pradeep, Irfan Nooruddin. 2004. "Do party systems count? The number of parties and government performance in the Indian states." *Comparative Political Studies* 37(2):152–87.

Clarke, Colin. 2006. "Politics, Violence and Drugs in Kingston, Jamaica." *Bulletin of Latin American Research* 25:3, 420-440.

Cleary, Matthew R. 2007. "Electoral Competition, Participation, and Government Responsiveness in Mexico." *American Journal of Political Science* 51:2 (April) 283-99.

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I. Lindberg, Svend-Erik Skaaning, Jan Teorell, David Altman, Michael Bernhard, Agnes Cornell, M. Steven Fish, Haakon Gjerløw, Adam Glynn, Allen Hicken, Joshua Krusell, Anna Lührmann, Kyle L. Marquardt, Kelly McMann, Valeriya Mechkova, Moa Olin, Pamela Paxton, Daniel Pemstein, Brigitte Seim, Rachel Sigman, Jeffrey Staton, Aksel Sundtröm, Eitan Tzelgov, Luca Uberti, Yi-ting Wang, Tore Wig, and Daniel Ziblatt. 2018. "V-Dem Codebook v8" Varieties of Democracy (V-Dem) Project.

Dahl, Robert A. 1956. *A preface to democratic theory*. Chicago: University of Chicago Press.

Dahl, Robert A. 1971. *Polyarchy: Participation and Opposition*. New Haven: Yale University Press.

Danziger, J. 1978. *Making Budgets*. London: Sage.

Fiorina, Morris P. 1973. "Electoral Margins, Constituency Influence, and Policy Moderation: A Critical Assessment." *American Politics Quarterly* 1:4, 479-98.

Geddes, B. 1991. "A Game Theoretical Model of Reform in Latin American Democracies." *American Political Science Review* 85: 371-92.

Geddes, Barbara. 1994. *Politician's Dilemma: Building State Capacity in Latin America*. Berkeley: University of California Press.

Gerring, John, Maxwell Palmer, Jan Teorell, Dominic Zarecki. 2015. "Demography and Democracy: A Global, District-level Analysis of Electoral Contestation." *American Political Science Review* 109:3 (August) 574-91.

Golden Miriam A and Devesh Tiwari. 2009. "Criminality and malfeasance among national legislators in contemporary India." Presented at Annual Meeting American Political Science Association, Toronto, Sep. 3-6.

Gordon, Sanford C., Gregory A. Huber. 2007. "The Effect of Electoral Competitiveness on Incumbent Behavior." *Quarterly Journal of Political Science* 2: 107–38.

Griffin, John D. 2006. "Electoral Competition and Democratic Responsiveness: A Defense of the Marginality Hypothesis." *Journal of Politics* 68:4 (November) 911-21.

Grofman, Bernard, Peter Selb. 2009. "A fully general index of political competition." *Electoral Studies* 28.2 (2009): 291-296.

Grzymala-Busse, Anna. 2007. *Rebuilding Leviathan: Party Competition and State Exploitation in Post-Communist Democracies.* Cambridge: Cambridge University Press.

Harmel, Robert, John D. Robertson. 1985. "Formation and success of new parties: A cross-national analysis." *International political science review* 6.4: 501-523.

Hecock, R. Douglas. 2006. "Electoral competition, globalization, and subnational education spending in Mexico, 1999–2004." *American Journal of Political Science* 50.4: 950-961.

Heller, William B., Andreas P. Kyriacou, Oriol Roca-Sagalés. 2011. "Party Competition and Government Quality: The Politics of Turning a Blind Eye to Poor Governance." Presented at the annual meetings of the Midwest Political Science Association, Chicago, IL.

Hicken, Allen. 2018. "Party Systems and the Politics of Development." In *Handbook on the Politics of Development*, Oxford University Press. Carol Lancaster and Nicolas van de Walle, eds.

Hoggart, Keith. 1984. "Political parties and local authority capital investment in English cities, 1966–1971." *Political Geography Quarterly* 3.1: 5-32.

Huber, Evelyne, Thomas Mustillo, John D. Stephens. 2008. "Politics and social spending in Latin America." *Journal of Politics*, 70(2), 420-436.

Jones, Philip Edward. 2013. "The Effect of Political Competition on Democratic Accountability." *Political Behavior* 35:481–515.

Karran, Terence. 1982. "'Borough Politics' and 'County Government' Administrative Styles in the Old Structure." *Policy & Politics* 10.3: 317-342.

Kayser, Mark Andreas, René Lindstädt. 2015. "A cross-national measure of electoral competitiveness." *Political Analysis* 23.2: 242-253.

Keefer, Philip, R. Vlaicu. 2008. "Democracy, credibility and clientelism." *Journal of Law, Economics, and Organization* 24(2):371—406.

Keefer, Philip. 2007. "Clientelism, credibility, and the policy choices of young democracies." *American Journal of Political Science* 51(4):804--21.

Kollman, Ken, Allen Hicken, Daniele Caramani, David Backer. 2011. "Constituency-Level Elections Archive." (CLEA, www.electiondataarchive.org), September 14, 2011 [dataset]. Ann Arbor, MI: University of Michigan, Center for Political Studies.

Konisky, David M., Michiko Ueda. 2011. "The Effects of Uncontested Elections on Legislator Performance." *Legislative Studies Quarterly* 36:2, 199-229.

Lachat, Romain. 2011. "Electoral Competitiveness and Issue Voting." *Political Behavior* 33, 645–63.

Lee, Cheol-Sung. 2005. "Income inequality, democracy, and public sector size." *American Sociological Review*, 70(1), 158-181.

Lindberg Staffan I, Minion K.C. Morrison 2008. "Are African Voters Really Ethnic or Clientelistic?: Survey Evidence from Ghana." *Political Science Quarterly* 123(1): 95-122.

Mainwaring, Scott, Carlos Gervasoni, Annabella España Najera. 2017. "Extra- and Within-System Electoral Volatility." *Party Politics* 23:6 (November): 623-635.

Marshall, Monty, Ted Gurr, Keith Jaggers. 2014. *Polity IV project: Dataset users' manual.* http://www.systemicpeace.org/inscr/p4manualv2013.pdf

Nohlen, Dieter (ed). 2005. *Elections in the Americas: A Data Handbook, vols 1-2*. New York: Oxford University Press.

Nohlen, Dieter; Florian Grotz; Christof Harmann (eds). 2002. *Elections in Asia and the Pacific: A Data Handbook, vols 1-2*. New York: Oxford University Press.

Nohlen, Dieter; Michael Krennerich; Bernhard Thibaut (eds). 1999. *Elections in Africa: A Data Handbook*. Oxford: Oxford University Press.

Nohlen, Dieter; Philip Stover (eds). 2010. *Elections in Europe: A Data Handbook*. Nomos Verlagsgesellschaft.

Nyblade, Benjamin and Steven R. Reed. 2008. "Who cheats? Who loots? Political competition and corruption in Japan, 1947--1993." *American Journal of Political Science* 54(4):926—41.

Padovano, Fabio, Roberto Ricciuti. 2009. "Political Competition and Economic Performance: Evidence from the Italian Regions." *Public Choice* 138, 263–77.

Powell, G. Bingham, Jr. 2000. *Elections as Instruments of Democracy: Majoritarian and Proportional Visions*. New Haven and London: Yale University Press.

Riker, William H. 1962. *The theory of political coalitions*. New Haven: Yale University Press.

Rogers, Diane Lim, John H. Rogers. 2000. "Political competition and state government size: Do tighter elections produce looser budgets?" *Public Choice, 105*, 1–21.

Saez, Lawrence, Aseema Sinha. 2010. "Political cycles, political institutions and public expenditure in India, 1980–2000." *British Journal of Political Science* 40.1: 91-113.

Sartori, Giovanni. 1976. *Parties and Party Systems*. Cambridge: Cambridge University Press.

Schumpeter, Joseph A. 1942/1950. *Capitalism, Socialism and Democracy*. New York: Harper & Bros.

Shugart, Matthew Soberg, John M. Carey. 1992. *Presidents and assemblies: Constitutional design and electoral dynamics*. Cambridge: Cambridge University Press.

Skaaning, Svend-Erik, John Gerring, Henrikas Bartusevičius. 2015. "A Lexical Index of Electoral Democracy." *Comparative Political Studies* 48:12 (October) 1491-1525.

Solé-Ollé, Albert. 2006. "The effects of party competition on budget outcomes: Empirical evidence from local governments in Spain." *Public Choice* 126.1-2: 145-176.

Stigler, George J. 1972. "Economic Competition and Political Competition." *Public Choice* 13 (September) 91-106.

Stonecash, Jeffrey M. 1987. "Inter–party competition, political dialogue, and public policy: a critical review." *Policy Studies Journal* 16(2):243–62.

Strom, Kaare. 1989. "Inter-party competition in advanced democracies." *Journal of Theoretical Politics* 1.3: 277-300.

Strom, Kaare. 1992. "Democracy as political competition." *American Behavioral Scientist* 35.4-5: 375-396.

Teorell, Jan, Michael Coppedge, Svend-Erik Skaaning, Staffan I. Lindberg. 2016. "Measuring Electoral Democracy with V-Dem Data: Introducing a New Polyarchy Index." Working Paper Series 2016:25, Varieties of Democracy Institute.

Ting, Michael M., James M Snyder, Jr., Shigeo Hirano, Olle Folke. 2013. "Elections and Reform: The Adoption of Civil Service Systems in the U.S. States." *Journal of Theoretical Politics* 25, 363-87.

US Bureau of Economic Analysis. 2018. *NIPA Handbook: Concepts and Methods of the U.S. National Income and Product Accounts*. Washington, DC: US Bureau of Economic Analysis.

Vanhanen, Tatu. 2000. "A New Dataset for Measuring Democracy, 1810-1998." *Journal of Peace Research* 37, 251-65.

Weitz-Shapiro, Rebecca. 2012. "What Wins Votes: Why Some Politicians Opt Out of Clientelism." *American Journal of Political Science* 56:3 (July) 568-83.

Wittman, Donald. 1989. "Why Democracies Produce Efficient Results." *Journal of Political Economy*, 97(6), pp. 1395-1424.

Wittman, Donald. 1995. *The Myth of Democratic Failure: Why Political Institutions are Efficient*. Chicago: University of Chicago Press.

World Bank. 2018. *World Development Indicators 2018*. Washington, DC: World Bank.

Appendix A: Data Description

Table A1: Variable Definitions

INDICATORS OF COMPETITION

Contestation. Composite score of *contestation, votes, leg.* and *contestation, votes, pres.* In election years where only a legislative election occurs, the value is equal to *contestation, votes, leg.* In election years where both legislative and presidential elections occur, the contestation score is the mean value of the two individual contestation scores. Option #1 in Table 2 (our benchmark measure of contestation). *Source:* authors. *Scale:* interval. *inc_chall_combined*

Contestation, votes, leg. 100 – (vote share of the previous winner in the current legislative election – vote share of the challenger in the current legislative election). Option #2 in Table 2. *Source:* authors. *Scale:* interval. *contestation_vote*

Contestation, seats, leg. 100 – (seat share of the previous winner in the current legislative election – seat share of the challenger in the current legislative election). Option #3 in Table 2. *Source:* authors. *Scale:* interval. *contestation_seat*

Contestation, votes, pres. 100 – (vote share of the previous winner in the current presidential election – vote share of the challenger in the current presidential election). *Source:* authors. *Scale:* interval. *pres_contestation_vote*

Competitiveness: Largest party. Composite score of *Largest-party, votes, leg.* and *Largest-party, votes, pres. Source:* authors. Option #4 in Table 2. *Scale:* interval. *largest_party_combined*

Competitiveness: Largest party, votes, leg. 100 – vote share of the largest party in a legislative election. Option #5 in Table 5. *Source:* authors. *Scale:* interval. *v2ellovtlg_100*

Competitiveness: Largest party, seats, leg. 100 – seat share of the largest party in a legislative election. Option #6 in Table 6. *Source:* authors. *Scale:* interval. *v2ellostsl_100*

Competitiveness: Largest party, votes, pres. 100 – vote share of the largest party in a presidential election. *Source:* authors. *Scale:* interval. *v2elvotlrg_100*

Competitiveness: Top two. Composite score of *Top two, votes, leg.* and *Top two, votes, pres. Source:* authors. Option #7 in Table 2. *Scale:* interval. *top2_combined*

Competitiveness: Top two, votes, leg. 100 – (vote share of the largest party – vote share of the second largest party) in a legislative election. Option #8 in Table 2. *Source:* authors. *Scale:* interval. *contestation_top*

Competitiveness: Top two, seats, leg. 100 – (seat share of the largest party – seat share of the second largest party) in a legislative election. Option #9 in Table 2. *Source:* authors. *Scale:* interval. *contestation_seat_top*

Competitiveness: Top-two, votes, pres. 100 – (vote share of the largest party – vote share of the second largest party) in a presidential election. *Source:* authors. *Scale:* interval. *pres_contestation_top2*

Other competitiveness scores

Vanhanen (2000), focused on largest party (similar to Table 1). However, several additional coding rules that distinguish it from our measure are implemented. Where information on vote shares are unavailable, seat shares are substituted. If competitors in legislative elections are independent candidates rather than organized parties the largest party is assigned a score of 30%. If the vote (or seat) share garnered by the largest party falls below 30% it is nonetheless assigned a score of 30%, under the assumption that any further diminution is a product of electoral system laws and is irrelevant to the quality of democracy. If the executive is unelected, the largest party is assumed to have won 100% of the vote. In polities with a separately elected chief executive, results for presidential and legislative elections are combined based on a judgment of how dominant each branch is. If branches are co-equal, each is assigned a weight of 50%; if the executive is more powerful it receives a weighting of 75%; and so forth. *Scale*: Interval. *e_van_comp*

Borman and Golder (2013), focused on the effective number of parties. Scores the effective number of political parties based on (Laakso and Taagepera, 1979). S*cale:* interval. *enep*

Altman and Pérez-Liñán (2002), focused on effective competition. Incorporates all parties but with concern for the relative coherence of government and opposition forces – which has the effect of giving extra weight to the size of the largest parties. The index of effective competition is applied to eighteen Latin American polities from 1978 to 1996. *Scale:* interval. *c_h*

Kayser and Lindstädt (2015), a focus on electoral risk defines as the expected probability that the plurality party in parliament loses its seats plurality in the next election. This estimate is derived from past volatility in the party's vote share and the nature of the electoral system (specifically, the vote-seat elasticity). Because their measure makes sense only where parties are relatively stable entities they limit their sample to developed democracies after World War II. *Scale:* interval. *kl_lpr_extended*

Mainwaring et al. (2017), a measure of total electoral volatility. It is a composite measure of the net change in parties' vote shares from one election to the next that is driven by transfers to existing parties and the net change driven by transfers to new parties. *Scale:* interval. *pedersen*

RIGHT-SIDE VARIABLES

English colony. Former English colony. Source: Authors. *Scale*: binary. *English_legal_origin*

GDP per cap. Gross domestic product per capita in constant 1990 dollars, based on data from the Maddison Project (Bolt & van Zanden 2014), supplemented by estimates from Bairoch (1976), Broadberry (2015), Broadberry/Klein (2012), Gleditsch (2002), and the WDI (World Bank 2018), which are combined in a dynamic, three-dimensional latent trait model. *Source:* Fariss et al. (2017). *Scale:* logarithmic. *Maddison_gdppc_1990_estimate_ln*

Oil wealth. The aggregated real value of a polity's petroleum production, as a share of total population. *Source:* Haber & Menaldo (2011). *Scale:* interval. *e_Total_Oil_Income_PC*

Polyarchy. Electoral democracy index. *Source:* V-Dem (Coppedge et al. 2018; Teorell et al. 2016). *Scale:* interval. *v2x_polyarchy*

Population. Official population of a polity, counting only those acknowledged as citizens. This is based on data from the Maddison Project (Bolt & van Zanden 2014), supplemented by estimates from Broadberry/Klein (2012), Gleditsch (2002), Singer et al. (1972), and WDI (World Bank 2016), which are

combined in a dynamic, three-dimensional latent trait model. *Source:* Fariss et al. (2017). *Scale:* logarithmic. *Maddison_pop_estimate_ln*

Protestant. Percentage of population that claims to be part of a Protestant denomination in 1980. *Source:* La Porta et al. (1999). *Scale:* interval. *lp_protmg80*

Regions. A vector of dummies: Eastern Europe and Central Asia (including Mongolia), Latin America, Middle East & North Africa, Sub-Saharan Africa, Western Europe and North America, East Asia, South-East Asia, South Asia, the Pacific, and the Caribbean. *Source:* QoG (Teorell et al. 2013). *Scale:* nominal. *e_regionpol*

Population 65+ Population ages 65 and above as a percentage of the total population. Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. *Source*: WDI. *Scale:* Interval. *Populationages65andabove*

Election year Year of election in a country. *Source:* V-Dem (Coppedge et al. 2018; Teorell et al. 2016). *Scale:* dummy. *election_year*

Elections (N) Number of consecutive elections held in a country. *Source:* V-Dem (Coppedge et al. 2018; Teorell et al. 2016). *Scale:* interval. *electioncount*

Party Institutionalization. Level of party instutionalization measured as a composit score of a series of variables measuring level and depth of organization, links to civil society, cadres of party activists,party supporters within the electorate, coherence of party platforms and ideologies, party-linevoting among representatives within the legislature. *Source:* V-Dem, *Scale:* Interval. *v2xps_party*

Turnout. In this national election, what percentage (%) of all registered voters cast a vote accordingto official results *Source*: V-Dem (Coppedge et al. 2018; Teorell et al. 2016), *Scale:* interval. *v2eltrnout_fill*

Internal conflict. Did the country participate in an international armed conflict?Clarification: Coded 1 if the country participated in an international armed conflict in a givenyear, 0 otherwise. *Source:* V-Dem, based on Brecke (2010), *Scale:* Dummy. *e_miinteco*

Civil War. Is the country embroiled in a civil war as coded by the Political Institutions and Political Events (PIPE) dataset. *Source:* PIPE (Przeworski et al. 2013), *Scale:* Dummy. *s_pipe_civil_war*

Government consumption. General government final consumption expenditure reflects all government current expenditures for purchases of goods and services including compensation of employees, public services like education, police, and infrastructure, and most expenditures on national defense and security (excluding military expenditures that are part of government capital formation). The variable is logged. *Source*: WDI. *Scale:* Interval. *Generalgovernmentfinalconsump_ln*

Table A2: Descriptive Statistics

	Observations	*Mean*	*Median*	*SD*	*Min*	*Max*
(1) 100 – (Inc. – chall.), votes, combined	35,814	22.66	0	38.55	0	190
(2) 100 – (Inc. – chall.), votes, legisl.	34,812	22.34	0	39.41	0	190
(3) 100 – (Inc. – chall.), seats, legisl.	36,585	23.03	0	38.85	0	193.4
(4) 100 – largest party, votes, combined	36,198	13.65	0	23.73	0	124.79
(5) 100 – largest party, votes, legisl.	35,005	14.21	0	25.16	0	93.50
(6) 100 – largest party, seats, legisl.	36,871	14.08	0	24.03	0	99.53
(7) 100 – Top Two, votes, combined	36,038	21.95	0	36.34	0	124.7
(8) 100 – Top Two, votes, legisl.	35,005	21.77	0	36.90	0	124.7
(9) 100 – Top Two, seats, legisl.	36,660	21.56	0	34.94	0	100
Year	49,593	1897	1895	68.75	1780	2017
Polyarchy	23,078	0.273	0.178	0.264	0.00728	0.940
Oil income pc	14,399	344.0	0	2,666	0	78,589
GDP pc (log)	26,479	7.624	7.397	1.155	3.868	14.40
v2xps_party	12,978	0.502	0.504	0.288	0.00199	1
Population (65+)	10,480	6.155	4.186	4.262	0.750	26.56
Population (log)	26,284	15.04	15.11	1.931	7.507	21.38
Internal Conflict	14,180	0.0752	0	0.264	0	1
Government consumption (log)	7,847	2.753	2.778	0.395	0	5.060
Civil War	12,158	0.0667	0	0.250	0	1
Election (N)	47,838	119.6	119.5	68.89	1	327
Election, year	47,838	0.0747	0	0.263	0	1
Turnout	10,441	73.64	75.29	17.12	2.730	100.3

Table A3: Principal Components Analysis of Contestation Measures

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	8.55033	8.35346	0.95	0.95
Comp2	0.19687	0.0426093	0.0219	0.9719
Comp3	0.15426	0.100744	0.0171	0.9891
Comp4	0.053516	0.0332166	0.0059	0.995
Comp5	0.0202994	0.00754942	0.0023	0.9973
Comp6	0.01275	0.00618389	0.0014	0.9987
Comp7	0.00656607	0.00290478	0.0007	0.9994
Comp8	0.00366129	0.00191608	0.0004	0.9998
Comp9	0.00174521	.	0.0002	1

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Comp7	Comp8	Comp9
1	0.3357	-0.2542	0.3355	0.0766	-0.2158	-0.5759	-0.0736	-0.4301	0.3683
2	0.3352	-0.2198	0.3872	0.1605	-0.3747	-0.1749	-0.3058	0.5401	0.3276
3	0.3257	0.3967	0.6053	0.1561	0.1390	0.4862	0.2816	-0.1037	-0.0068
4	0.3347	-0.2235	-0.3305	0.3567	0.6028	0.2563	-0.1806	0.3338	-0.1689
5	0.3356	-0.1647	-0.3325	0.3999	-0.4479	0.2529	-0.0719	-0.5357	0.1819
6	0.3268	0.5612	-0.3435	0.2139	-0.1096	-0.4594	0.3779	0.2177	-0.0335
7	0.3367	-0.2784	-0.0946	-0.4418	0.2791	-0.0592	0.3979	-0.0862	0.5982
8	0.3372	-0.2368	-0.0975	-0.4463	-0.3678	0.2355	0.2360	0.2022	-0.5781
9	0.3321	0.4518	-0.1217	-0.4656	0.0674	0.0409	-0.6535	-0.1359	0.0480

Principal components (eigenvectors) analysis of nine contestation indices described in Table 2. Observations = 34,697. Components = 9. Trace = 9. Rotation: (unrotated = principal). Rho = 1.0000

Table A4: Data Coverage of Contestation Index

Country	First Year	Last Year	Country	First Year	Last Year
Afghanistan	1789	2014	Chile	1789	2013
Albania	1789	2017	China	1789	2017
Algeria	1789	2017	Colombia	1789	2014
Andorra	1993	2015	Comoros	1789	2016
Angola	1789	2012	Congo DR	1789	2011
Antigua and Barbuda	1789	2014	Congo, Republic of	1789	2016
Argentina	1789	2015	Costa Rica	1789	2014
Armenia	1919	2017	Croatia	1941	2016
Australia	1789	2016	Cuba	1789	2013
Austria	1789	2016	Cyprus	1789	2016
Azerbaijan	1995	2015	Czech Republic	1918	2013
Bahamas	1956	2017	Denmark	1789	2015
Bahrain	1789	2001	Djibouti	1789	2016
Bangladesh	1789	2014	Dominica	1789	2014
Barbados	1951	2013	Dominican Republic	1789	2016
Belarus	1994	2016	Ecuador	1789	2013
Belgium	1789	2014	Egypt	1789	2015
Belize	1789	2015	El Salvador	1789	2015
Benin	1789	2016	Equatorial Guinea	1789	2016
Bhutan	1789	2013	Eritrea	1789	2017
Bolivia	1789	2014	Estonia	1918	2016
Bosnia and Herzegovina	1990	2014	Ethiopia	1789	2015
Botswana	1789	2014	Fiji	1789	2014
Brazil	1789	2014	Finland	1809	2015
Brunei	1789	2017	France	1795	2017
Bulgaria	1878	2016	Gabon	1789	2016
Burkina Faso	1789	2015	Gambia	1789	2017
Burma	1789	2015	Georgia	1919	2016
Burundi	1789	2015	German Democratic Republic	1945	1990
Cambodia	1789	2013	Germany	1789	2013
Cameroon	1789	2013	Ghana	1789	2016
Canada	1789	2015	Greece	1822	2015
Cape Verde	1789	2016	Grenada	1789	2013
Central African Republic	1789	2016	Guatemala	1789	2015
Chad	1789	2016	Guinea	1789	2015

Country	First Year	Last Year	Country	First Year	Last Year
Guinea Bissau	1789	2014	Malaysia	1789	2013
Guyana	1789	2015	Maldives	1789	2014
Haiti	1789	2016	Mali	1789	2013
Honduras	1789	2013	Malta	1789	2017
Hong Kong	1789	2016	Marshall Islands	1789	1976
Hungary	1789	2014	Mauritania	1789	2014
Iceland	1789	2016	Mauritius	1789	2014
India	1789	2014	Mexico	1789	2015
Indonesia	1789	2014	Micronesia	1789	1978
Iran	1789	2016	Moldova	1994	2014
Iraq	1789	2014	Monaco	1789	2013
Ireland	1918	2016	Mongolia	1789	2016
Israel	1948	2015	Montenegro	1789	2016
Italy	1861	2013	Morocco	1789	2016
Ivory Coast	1789	2016	Mozambique	1789	2014
Jamaica	1865	2016	Namibia	1789	2014
Japan	1789	2014	Nauru	1789	1950
Jordan	1789	2006	Nepal	1789	2013
Kazakhstan	1999	2016	Netherlands	1789	2017
Kenya	1789	2013	New Zealand	1789	2014
Kiribati	1789	2016	Nicaragua	1789	2016
Kosovo	1789	2014	Niger	1789	2016
Kuwait	1789	1989	Nigeria	1789	2015
Kyrgyzstan	1995	2015	North Korea	1945	2014
Laos	1789	1988	Norway	1789	2013
Latvia	1920	2014	Oman	1789	1999
Lebanon	1789	1942	Pakistan	1789	2013
Lesotho	1789	2015	Palau	1789	2016
Liberia	1789	2011	Palestine (West Bank)	1948	2017
Libya	1789	2017	Panama	1789	2014
Liechtenstein	1789	2017	Papua New Guinea	1789	2012
Lithuania	1918	2016	Paraguay	1811	2013
Luxembourg	1815	2013	Peru	1789	2016
Macedonia	1990	2016	Philippines	1789	2016
Madagascar	1789	2013	Poland	1789	2015
Malawi	1789	2014	Portugal	1789	2016

Country	First Year	Last Year	Country	First Year	Last Year
Qatar	1789	2017	Sweden	1887	2014
Romania	1789	2016	Switzerland	1789	2015
Russia	1789	2016	Syria	1789	2017
Rwanda	1789	2013	Taiwan	1789	2016
Saint Vincent and the Grenadines	1789	2015	Tajikistan	1991	2015
Samoa	1789	2016	Tanzania	1789	1960
San Marino	1789	2016	Thailand	1789	2014
Sao Tome and Principe	1789	2016	Timor Leste	1789	2017
Saudi Arabia	1789	2017	Togo	1789	2015
Senegal	1789	2012	Tonga	1789	2014
Serbia	1804	2016	Trinidad and Tobago	1789	2015
Seychelles	1789	2016	Tunisia	1789	2014
Sierra Leone	1789	2012	Turkey	1789	2015
Singapore	1867	2015	Turkmenistan	1994	2012
Slovakia	1938	2016	Tuvalu	1789	1976
Slovenia	1989	2014	Uganda	1789	2016
Solomon Islands	1789	2014	Ukraine	1991	2014
Somalia	1789	2016	United Arab Emirates	1789	2005
Somaliland	1789	2010	United Kingdom	1832	2015
South Africa	1789	2014	United States	1794	2016
South Korea	1789	2016	Uruguay	1789	2014
South Sudan	1789	2017	Uzbekistan	1789	2016
South Yemen	1789	2017	Vanuatu	1789	2016
Spain	1789	2016	Venezuela	1789	2015
Sri Lanka	1789	2015	Vietnam	1789	2016
St Kitts and Nevis	1789	2015	Vietnam, Dem Rep	1789	1975
St Lucia	1789	2016	Yemen	1789	2017
Sudan	1789	2015	Zambia	1789	2016
Suriname	1789	2015	Zimbabwe	1789	2013
Swaziland	1789	2013			

Appendix B: Robustness Tests

Table B1: Contestation Volatility

	1
Consecutive elections (log)	-10.249***
	(1.544)
Lagged DV	0.989***
	(0.20)
Polities	153
Years	221
Obs.	2,359
R2	0.434

Outcome: contestation, differenced. *Estimator:* ordinary least squares with polity and year fixed effects. Standard errors clustered by polity in parentheses. *** p<0.01, ** p<0.05, * p<0.10 Constant omitted.

Table B2: Varying Lags

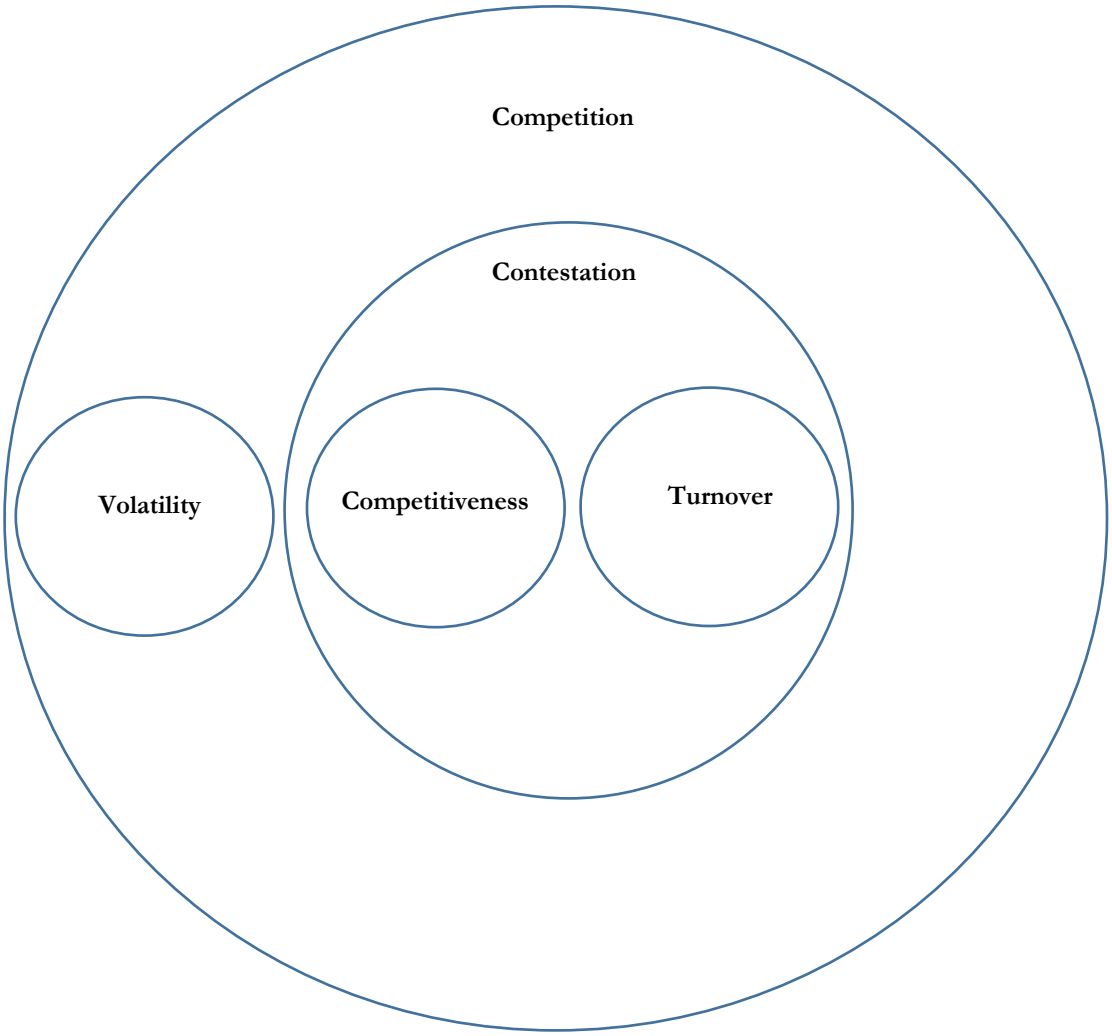
Contestation measured at	*t+5*	*t-1*	*t-5*
Model	**1**	**2**	**3**
Contestation	-0.00155*	-0.00320***	-0.00169**
	(0.001)	(0.001)	(0.001)
Contestation²	0.00001	0.00002***	0.00001**
	(0.000)	(0.000)	(0.000)
Population (log)	-0.19996***	-0.20344***	-0.22409***
	(0.065)	(0.071)	(0.071)
GDP pc (log)	-0.03775	-0.04913	-0.05059
	(0.062)	(0.059)	(0.058)
Polyarchy	0.23790***	0.37025***	0.26265***
	(0.074)	(0.090)	(0.074)
Countries	162	165	165
Years	53	55	55
Observations	5,964	6,548	6,470
R-squared	0.102	0.120	0.111

Outcome: Government consumption (log). Contestation measured at t+5, t-1, t-5. All other covariates measured at t. Country clustered standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.10

Appendix C: Concepts

This paper engages a field of overlapping concepts that have been used in a variety of ways by many authors over the past century. We do not attempt to legislate meanings for all of these terms. But it is important to clarify our own usage. To that end, we map out definitions and their inter-relationships within this semantic field *for present purposes* in Figure C1.

Figure C1: Key Terms and their Inter-relationships



Appendix References

Bairoch, Paul. 1976. "Europe's gross national product: 1800-1975." J*ournal of European economic history*.

Bolt, Jutta, and Jan Luiten Van Zanden. 2014. "The M addison P roject: collaborative research on historical national accounts." *The Economic History Review,* 67(3), pp. 627-651.

Broadberry, Stephen (2015). Accounting for the Great Divergence. Accessed 2018 from: www.nuffield.ox.ac.uk/users/Broadberry/AccountingGreatDivergence6.pdf, accessed 23 November 2016.

Broadberry, Stephen & Alexander Klein. 2012. Aggregate and per capita GDP in Europe, 1870–2000: Continental, Regional and National Data with Changing Boundaries. Scandinavian Economic History Review, 60(1), 79–107.

Fariss, Christopher J., Charles D. Crabtree, Therese Anders, Zachary M. Jones, Fridolin J. Linder & Jonathan N. Markowitz. 'Latent Estimation of GDP, GDP per capita, and Population from Historic and Contemporary Sources', unpublished manuscript, University of Michigan (2017).

Gleditsch, Kristian Skrede. 2002. "Expanded trade and GDP data." *Journal of Conflict Resolution,* 46(5), pp. 712-724.

Haber, Stephen, and Victor Menaldo. 2011. "Do natural resources fuel authoritarianism? A reappraisal of the resource curse." *American Political Science Review* ,105(1), pp. 1-26.

La Porta, Rafael, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishny. 1999. "The quality of government." *The Journal of Law, Economics, and Organization,* 15(1), pp. 222-279.

Teorell, Jan, Nicholas Charron, Stefan Dahlberg, Sören Holmberg, Bo Rothstein, Petrus Sundin, and Richard Svensson. 2013. "The quality of government dataset, version 20Dec13." University of Gothenburg: The Quality of Government Institute.