The Political Determinants of Economic Performance: Unbundling the Effect of Executive Constraints on Growth

Erick Alvarez Barreno[†]
Working paper

This version: December 15, 2023

Abstract

Most work in regime effects focuses on whether democracy matters for development. Despite the vast academic production, it remains unclear what aspects of regimes are producing such an outcome. This problem arises partly because scholars use composite measures of democracy, neglecting the complex and varied nature of regime evolution. I unpack the democracy-growth link by examining the economic roles and effects of two forms of executive constraints. Horizontal constraints are defined as the power of the parliament to control the executive, whereas vertical constraints are the capacity of citizens to keep their rulers accountable. Using an unbalanced panel with 174 countries from 1950 to 2022, I found that the presence of horizontal constraints reduces GDP per capita. Even though the presence of both institutions fosters growth, vertical constraints appear to be driving such an effect. These patterns remain insensitive across specifications using within and GMM estimators. This research provides evidence of a relevant interaction between democracy components, in which participatory broad-based inclusive institutions seem to be more relevant for development than liberal and elite inclusive ones.

Keywords: Democracy, executive constraints, institutions, economic growth

1 Introduction

Scholars widely contend that securing property rights and enforcing contracts have a positive effect on long-term growth (Acemoglu, Johnson, and Robinson 2001, 2005; Rodrik, Subramanian, and Trebbi 2004; Acemoglu and Robinson 2012). This literature centers on the critical role of institutions in reducing transaction costs and enabling individuals to

[†]Department of Comparative Politics, University of Bergen. Email: erick.alvarez-barreno@uib.no

capture the expected gains of voluntary exchange (North and Thomas 1973; North 1990). As with political institutions, most work has focused on the effects of regimes, particularly on whether democracy matters for many desirable social and economic outcomes. However, results from different empirical analyses are contradictory, suggesting for example weakly negative effects (Barro 1996), no significant differences compared to autocracies (Przeworski et al. 2000; Gerring et al. 2005; Doucouliagos and Ulubaşoğlu 2008), or an overwhelming superiority of democracy in driving societies into the path of prosperity (Papaioannou and Siourounis 2008; Acemoglu et al. 2019; Colagrossi, Rossignoli, and Maggioni 2020; Knutsen 2021; Gerring, Knutsen, and Berge 2022).

Despite the vast academic production, scholars have failed to produce a systematical understanding of how democracy fosters growth, and which institutions are essential for that purpose. Most of the ambiguous and heterogeneous results found in the literature are partly a reflection of the use of composite regime concepts that neglect the variety of institutions brought together in binary indicators. I unpack democracy into two forms of executive constraints to unveil the paths through which specific regime components affect growth while capturing greater patterns of institutional settings across space and time. These institutions impose checks on rulers that reduce the threat of arbitrary state predation, which in turn incentivizes socially beneficial economic activities. But to what extent do they shape economic performance? And through which channels do they influence growth?

This article disentangles the political dimensions of development by examining the economic roles and effects of two forms of executive constraints. Horizontal constraints are defined as the powers of the parliament to control the executive, whereas vertical constraints are the capacity of citizens to keep their rulers accountable. I argue that each constraint performs different roles that may compete when they influence growth. Horizontal constraints promote physical capital by credibly committing rulers to not expropriate, while vertical constraints improve human development enhancing electoral accountability and public goods provision. Using an unbalanced panel with 174 countries from 1950 to 2022, I estimate the direct effect of both institutions on growth. I use two-way fixed effect regression models to account for both unit-specific (time-invariant) and time-specific (unit-invariant) unobserved confounders. These models include up to eight lags of GDP per capita that control the dip in growth that occurs right before major political transformations, as documented in Papaioannou and Siourounis (2008), and Acemoglu et al. (2019). For instance, I also present estimates for a Blundell and Bond (1998) System Generalized Method of Moments (GMM) that address the problems related to the inclusion of these lags as regressors.

Contradictory to the literature, I found that horizontal constraints decrease GDP per capita by 0.09 percentage points annually. Even though both constraints foster growth, vertical constraints seem to be driving such an effect, increasing GPD per capita

by 0.07 percent. These results have several implications. First, I provide evidence of an empirically relevant interaction between democracy components, in which vertical-participatory institutions seem to be more relevant than horizontal ones. The article also models the relationship between each set of institutions and sources of development such as physical and human capital. Further research could examine whether the interaction of these components may change the stock of these factors, and how this affects growth. The article is organized as follows. Section 2 depicts the relevance of unpacking democracy into its primal components, then, I present some hypotheses. Section 3 presents the data, section 4 some preliminary results and section 5 concludes.

2   Unpacking the democracy-growth link

Regime evolution is complex to the extent that countries might experience political transformations in very different forms and degrees. Recent contributions have proposed diverse approaches to better understand regime patterns and their consequences. Some studies have applied dis-aggregated measurement strategies when studying the role of certain democratic aspects (Cox and Weingast 2018; Gerring et al. 2021; Fjelde, Knutsen, and Nygård 2021). Studies have also unpacked features such as accountability (Lührmann, Marquardt, and Mechkova 2020), and polyarchy dimensions (Alexandra Boese and Charles Wilson 2023). Boese et al. (2022) construct a cube of democracy patterns based on three dimensions, namely participation, electoral contestation, and constraints on the executive.

Studying constraints on the executive provides an ideal framework to examine the impact of specific regime components while capturing a greater variety of democratization patterns and regime institutional configurations across space and time. First, political constraints are commonly referred to as institutions of limited government that may solve the fundamental problem in which a government strong enough to protect individual rights is also strong enough to transgress them (Weingast 1993; 1995). These institutions impose controls on rulers' behavior which reduces the menace of arbitrary state predation. By distinguishing two types of constraints, I theoretically trace them with institutions that create horizontal and vertical forms of accountability with the citizenry. For instance, I highlight two sets of institutions and unveil how the literature has already been depicting the democracy-growth relationship from their perspective. The basic assumption is that even though considering a democracy requires higher levels of both, many countries may score high on one or lower on the other at any moment of their lives. I thus not only include periods of democratization as other researchers, but I also consider any political transformation that could be produced by the interaction of these institutions.

Figure 1 depicts a basic regime representation inspired by Dahl's two-dimensional regime typology. Recall that horizontal constraints are treated as checks on rulers func-
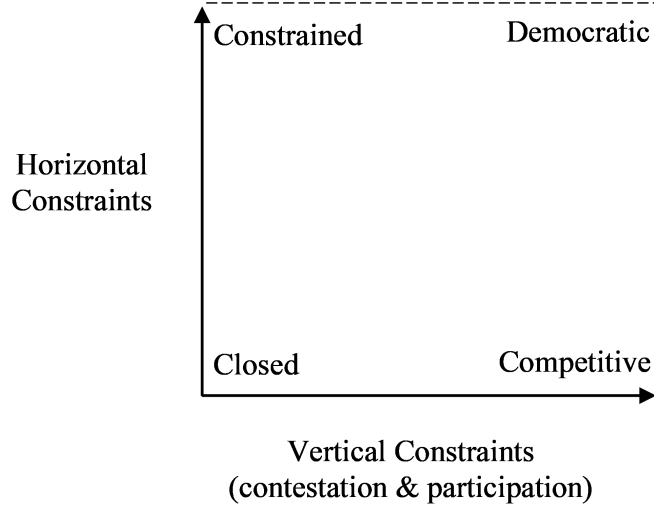
Figure 1: Varieties of regimes from a two-dimensional approach

tioning at the same level of political influence (i.e., legislatures or judiciary), while vertical constraints refer to the classical dimensions of electoral democracy, namely contested elections, and the extent of political participation (Dahl 1971). Let me call a regime near the lower left corner of the figure a closed regime, which is characterized by low levels of both constraints. As a closed regime shifts upwards, it is moving toward greater levels of horizontal constraints. Rulers in such settings face more checks on their behavior, but the regime remains non-inclusive as it has low levels of both public contestation and participation. If a closed regime changes towards the lower right corner, it is developing competitive and multiparty elections under extensive suffrage. Such vertically constrained regimes would be inclusive and competitive but would have exiguous checks and balances. As well as Dahl (1971), my approach also implies that a regime might change along one dimension and not the other. Thus, a constrained regime may turn democratic by developing higher levels of vertical constraints, and competitive ones would do the same by having higher levels of horizontal constraints. This approach also supports Dahl's argument that both dimensions may vary independently of the other. This means that a regime may develop on different dimensions in different degrees and sequences.

It should be noted that this paper is not intended to provide a rigorous classification or typology of regimes but to depict some varieties of institutional settings from a two-dimensional approach. On the other hand, I could take Boese et al. (2022) contribution to construct these varieties from their three-dimensional regime composition, but there is limited theory connecting these institutions and economic outcomes. This problem is latent when splitting vertical constraints into the participation and contestation dimensions. The following subsections assess the institutions that I use as regime dimensions, I then present some theoretical expectations about their potential indirect effect on growth and how their interaction may moderate this relationship.

4

2.1 Horizontal Constraints

Executive constraints are institutions that control the discretionary nature of power. As Boese et al. (2022) state "the limitation of the power itself is a key dimension of democracy." Such constraints provide checks on rulers' behavior by splitting up the power of the government into relatively autonomous branches. An effective division of power entails horizontal accountability, in which several institutional veto players can influence political decision-making. These checks can be imposed from legislative control over executive attributions (e.g., public budget), an independent judiciary with legal instruments to review rulers' decisions (e.g., judicial review), or constitutional mechanisms placed to remove rulers from office (e.g., impeachment). Horizontally constraining institutions such as legislatures may also coexist within an authoritarian rule, as they serve as instruments of elite cooptation and policy concession (Gandhi 2008).

North and Weingast (1989) is perhaps the most prominent contribution linking horizontal constraints to economic and financial development. Analyzing the Glorious Revolution of 1688, they found that institutional constraints over the crown were conducive to capital market formation and a greater state capacity to raise revenues. These institutions are seen as "commitment devices" that turn credible ruler's promises to secure individual rights. Rulers are the principal menace to private property since they hold power over the confiscatory capacity of the state. The existence of horizontal constraints enables other institutional veto players to bind rulers' decisions to their interests. Hence, the ruler is obliged to respect some privileges of the already propertied (i.e., property rights), something that he would not have incentives to do without the commitment.

Empirically, the literature suggests that horizontal constraints provide investors with a "credible signal that the state will not confiscate investment returns, via taxation or frequent policy changes" (Wright 2008, 336). Using data on private investment in 74 developing countries, Stasavage (2002) finds that the change from a system without checks and balances to one in which the executive and the parliament are controlled by different political parties increases private investment by 16 percentage points. Studying authoritarian regimes, Wright (2008) finds that biding legislatures increase investment while non-binding legislatures do the opposite. Other studies associate electoral uncertainty with incentives to make irreversible productive investments (Bernanke 1983). Canes-Wrone and Park argue that "the larger the effects of an electoral outcome on an individual's financial situation, the more likely she should be to delay costly-to-undo investments" (2014, 87). They show that investment would decline due to the uncertainty produced by electoral competition. Moreover, they assert that the lesser the degree of executive power oversight, the greater the political uncertainty associated with electoral competition and, consequently, the larger the decline in private investment.

Recent work confirms the relevance of horizontal constraints. Cox and Weingast (2018)

evaluate whether executive constraints separately affect growth through political stability. They conclude that to reduce a country's risk of getting stuck in an instability-poverty trap, "it is more important to have a strong legislature constraining the executive than to subject him to free and fair elections" (Cox and Weingast 2018, 280). Using a panel of 57 developing democracies from 1975 to 2017, Canes-Wrone, Ponce de León, and Thieme (2023) contend the role of constraints on rulers as property-rights-enhancing institutions. Particularly, they find evidence that as constraints increase, investment is less affected by prospective electoral cycles. This is important as the costliness of reversing private fixed investment incentivizes economic agents to withhold or delay their operations when policy uncertainty is high.

Empirical research suggests that horizontal constraints foster growth via property rights protection which benefit primarily "the wealthy, propertied elite" (Mukand and Rodrik 2020). These institutions serve as commitment devices that reduce the economic downsides of state predation. From the perspective of economic agents, investment is highly sensitive to property rights protection (Knack and Keefer 1995). Investors need to ensure some certainty that they will be able to enjoy the returns of their productive operations once earned in the future. Institutions providing horizontal checks on rulers protect elite privileges such as property rights and generate a more predictable business environment. With the confidence of private economic agents assured, these configurations should experience higher levels of growth through investment than others not having such institutions. Hence, my first hypothesis stands as follows:

Hypothesis 1. Institutions imposing *horizontal constraints* on the executive increase *growth* through *physical capital* accumulation.

2.2   Vertical Constraints

An outstanding scholarly tradition pinpoints that retrospective voters should control bad-performing politicians. Barro (1973) develops a model in which the electoral process serves as a mechanism to align the interests of rulers with the interests of their constituents. Ferejohn (1986) argues that voting can be exercised as an accountability mechanism when politicians fail to meet a determined citizen's welfare threshold. Consequently, institutions providing electoral oversight could be seen as constraints that allow for vertical accountability to occur, in which citizens can evaluate and accordingly sanction their rulers.

Vertical constraints are institutions that bind the will of power holders with the interests of organized masses. This can be understood as a principal-agent relationship between voters and rulers. Researchers suggest that vertical constraints may foster growth by reducing predatory behavior and enabling better policy practices when the agency problems are solved. Indeed, by distinguishing two types of political accountability, Ben-

habib and Przeworski (2010) conclude that countries in which rulers are accountable grow faster than countries in which they are not. This is because, when rulers extract resources beyond a socially justified threshold, voters should remove them from office, generating political incentives for better public governance.

Cross-national studies have found a strong link connecting electoral institutions and human capital. Pinto and Timmons (2005) depicted this relationship using the median voter theorem. In this view, highly inclusive and extensively open systems (concurring both elections and universal suffrage) reduce entry barriers to power, allowing citizens to register their preferences and select their leader. Political competition allows voters to use the state as a source of redistribution from rich to poor Pinto and Timmons (2005). Restricting or enhancing electoral institutions would move the median voter to a closer political preference centered either on accumulating physical capital that could benefit the wealthy or targeting human capital to alleviate the necessities of the majority. Consequently, more competitive regimes are more likely "to provide goods with positive externalities, such as schools and health care, raising the level of human capital" (Pinto and Timmons 2005, 34).

This idea is supported by Besley and Kudamatsu (2006) who found a robust correlation between democracy and life expectancy. Studies also suggest that electoral democracy leads to greater public investment in health and education (Mulligan, Gil, and Sala-i-Martin 2004; Haggard and Kaufman 2020), and suffrage extension to women and the poor is associated with higher levels of social spending (Lindert 2004). Most recently, Wang, Mechkova, and Andersson (2019) show that the quality of competitive elections has a consistent positive effect on health outcomes. With a sample of 173 countries from 1900 to 2012, they found that one standard deviation increase in the *electoral principle index* (EPI variable in the V-Dem Dataset) is associated with a 1.8 percent decrease in infant mortality rate. Gerring et al. (2021) found that competitive elections are more strongly associated with human development than other aspects of democracy. Finally, some studies suggest that the impact of electoral institutions stands beyond regime type. Miller (2015) stresses that contested elections both in autocracies and democracies promote human development through health, education, gender equality and civil liberties. Cassani (2019) asserts this argument suggesting that "competitive autocracies display higher ratios of school enrollment and lower rates of child mortality relative to military, one-party and hegemonic-party regimes."

Empirical evidence widely contends that vertical constraints depicted as multiparty and competitive electoral institutions may influence growth by enhancing human capital. This effect is a product of three underlying mechanisms. Elections may provide voters with the capacity to make their rulers accountable for their actions, this in turn may reduce state predation and incentivize incumbents to align their preferences with the preferences of the citizenry. Decentralized participatory institutions may be used by

common citizens to solve problems that the government could not, improving the provision of public goods at the subnational level. Finally, higher degrees of participation and public contestation tend to create more inclusive political systems, increasing the size of the selectorate (Bueno de Mesquita et al. 2003; Bueno de Mesquita and Smith 2011). Rulers facing broader winning coalitions should have more incentives to provide public goods because of the redistributive pressures of the median voter. My second hypothesis thus argues that:

Hypothesis 2. Institutions imposing *vertical constraints* on the executive increase *growth* through *human capital* accumulation.

2.3   Assessing the interaction between executive constraints

Figure 1 depicts the varieties of institutional settings as products of a bi-dimensional plane, which identifies many different paths of regime evolution. Having modeled the separate roles for each constraint, I must now indicate how their interaction may change the stocks of physical and human capital described as crucial channels in the previous section. Take first the situation of a constrained regime as specified in Figure 1, which is characterized by higher levels of horizontal constraints, but in which most of the population is excluded from relevant political and economic activities. These regimes should foster private investment as stated by the credible commitment literature. Still, they would perform poorly in providing public goods or improving the living conditions of the common citizenry. Conversely, competitive regimes which are more inclusive should have better outcomes in human development, but democratic regimes should produce better results in accumulating both human and physical capital. I thus expect to observe a synergistic interaction between both institutions when functioning together, in which the predicted effect of both constraints on growth should be higher when both perform their roles jointly. However, in the absence of the other, the presence of a single institution may negatively impact one or the other source of growth. In other words, constrained regimes may foster physical investment, reducing incentives for public goods provision, while competitive ones may enhance human development but not present an attractive destination for investment. For instance, the third hypothesis predicts that the moderating effect of executive constraints may only be produced when the other is present. In the absence of at least one of them, the other will produce a negative or a null effect on growth.

Hypothesis 3. The effect of *horizontal (vertical) constraints* on *growth* is positive only in the presence of *vertical (horizontal) constraints*. When *vertical (horizontal) constraints* are absent, *horizontal (vertical) constraints* negatively influence *growth*.

3 Data and Methods

I examine the political institutions of an unbalanced panel of 174 countries between 1950 and 2022. The sample covers a total of 11785 country-year observations, but this number changes depending on the availability of information for certain variables and countries. The main dependent variable is the level of economic growth measured as the natural logarithm of gross domestic product (GDP) per capita measured in 1990 U.S. dollar international prices (dollar Geary-Khamis). This variable is conventionally used by the literature, and it covers 169 countries for the period up to 2018. Its information was obtained from the Maddison Project Database (Bolt et al. 2018), whose statistics correspond to a comprehensive study of the world's economic growth over centuries.

3.1 Horizontal Constraints

I use two different indicators to capture the level of horizontal constraints. First, I use the Polity 5 *xconst* variable which describes the degree of checks and balances between the various parts of the government on a 7-point scale. This variable refers to "the extent of institutional constraints[1] on the decision-making powers of the chief executive, whether an individual or a collective executive" (Marshall and Gurr 2020, 61). To construct this variable, Polity IV uses the notion of "horizontal accountability" described in the democratic literature, except that it is assumed that dictators may also be subject to certain institutional controls.

To capture the presence of horizontal constraints I use the approach of Cox and Weingast (2018). Therefore, I construct a dummy from *xconst* variable which is equal to 1 when country i in time t has "substantial limitations" (*xconst* = 5), they fit into the "intermediate category number three" (*xconst* = 6), or there is "parity or subordination of the executive" to other state powers (*xconst* = 7). Meanwhile, a country i in time t does not have horizontal constraints when Polity IV classifies it as "unlimited executive authority" (*xconst* = 1), "intermediate categories one and two" (*xconst* = 2; *xconst* = 4), and it has "moderate limitations" (*xconst* = 3). These two variables are available for 167 countries from 1800 to 2018.

My second measure draws from the indicators and indices of V-Dem (v.13) (Coppedge et al. 2023). Specifically, I use Lührmann, Marquardt, and Mechkova (2020) index of horizontal accountability. This form of accountability concerns "the power of state institutions to oversee the government by demanding information, questioning officials, and punishing improper behavior" Lührmann, Marquardt, and Mechkova (2020). Key agents

---

1. "Limits on the chief executive may be imposed by any "accountability group" in the polity." These groups are the legislative and judicial branches of government in Western democracies, and other groups such as "the ruling party in a one-party system, a council of nobles or powerful advisors in monarchies, and the military in coup-prone polities" (Addendum B: Polity IV Executive Constraints Concepts in Marshall and Gurr 2020, 61-65).

that perform this role include the legislature; the judiciary; and specific oversight agencies such as ombudsmen and different prosecutors.

3.2 Vertical Constraints

I measure vertical constraints using three approaches. First, I classify a country as vertically constrained when Miller, Boix, and Rosato (2022) code them as electoral democracy. They define a country as democratic when it satisfies the following conditions for Robert Dahl's polyarchy dimensions: "Contestation: 1. The executive is directly or indirectly elected in popular elections and is accountable directly to voters or to a legislature. 2. The legislature (or the executive if directly elected) is elected in free and fair elections. Participation: 1. Most adult males have the right to vote" (Miller, Boix, and Rosato 2022, 1530-31). Another way to measure this concept is with the Polity IV indicator related to the "competitiveness of executive selection" (*xrcomp* variable in Marshall and Gurr 2020). As Cox and Weingast (2018), a country is considered to have vertical constraints when at least one of the chief executives was elected by a competitive election (*xrcomp* = 2), or the heads of the executive are elected through elections with two or more parties or candidates (*xrcomp* = 3). Conversely, a country is coded as not having vertical constraints when transfers of power are not regulated (*xrcomp* = 0), and when the heads of the executive are determined by hereditary succession (*xrcomp* = 1).

Alternatively, I draw on Lührmann, Marquardt, and Mechkova (2020) index of vertical accountability that captures the extent to which citizens have the power to hold the government accountable. Mechanisms of vertical accountability include formal political participation of citizens (such as being able to organize political parties freely) and their participation in free and fair elections.

3.3 Control variables

I used the same control variables proposed by Papaioannou and Siourounis (2008), and Acemoglu et al. (2019). The first set of controls includes investment (as gross capital formation as a percentage of GDP), trade (as the sum of exports and imports of goods and services as a share of GDP), gross primary and secondary education enrollment rates, and infant mortality rate, all from the World Bank Development Indicators (WDI). In addition, I also include as controls the level of total factor productivity (henceforth TFP) in constant national prices and the human capital index from the Penn World Table version 10.01 (PWT 10.01) constructed by Feenstra, Inklaar, and Timmer (2015); tax revenues as a percentage of GDP from Hendrix (2010); the economic reforms index from Giuliano, Mishra, and Spilimbergo (2013); and the dichotomous measure of social unrest constructed by Acemoglu et al. (2019) from Banks and Wilson (2013).

3.4 Econometric model

To estimate the effects of executive constraints on economic growth I used a two-way fixed effects dynamic model, replicating the base-line model proposed by Acemoglu et al. (2019). I incorporate individual fixed effects that would account for country-specific characteristics that do not vary over time, such as geography, natural resources, social norms, and even the long-term impact of colonization strategies that may have influenced both the economic and political development of countries (Papaioannou and Siourounis 2008, 1525). The inclusion of unit-invariant time-fixed effects would also reflect influences of global trends on growth that are common to all countries in the sample, such as, for example, the impacts produced by the two oil shocks that occurred in the 1970s (Cox and Weingast 2018, 285-286).

As Acemoglu et al. (2019), my specification includes lags of the dependent variable, which allows for controlling GDP dynamics. According to them, a standard assumption of this type of model is that the key independent variable and past values of the dependent are orthogonal to current and future values of the dependent variable and that the error term has no serial autocorrelation (formally described as "sequential exogeneity"). For this reason, this model requires to include sufficient lags of the dependent variable to eliminate the residual of this autocorrelation. Finally, the inclusion of GDP lags also allows controlling for the impact of many economic factors such as commodity prices, agricultural productivity, and technology (Acemoglu et al. 2019, 57). My model specification is formally represented in the following equation:

$$Y_{it} = \alpha_i + \delta_t + \beta H_{it} + \lambda V_{it} + \vartheta (H \times V)_{it} + \sum_{j=1}^{p} \gamma_j Y_{it-j} + \eta X'_{it} + \varepsilon_{it} \qquad (1)$$

Where Y_{it} is the natural logarithm of gross domestic product (GDP) per capita measured in 1990 U.S. dollar international prices for country $_i$ and time $_t$. α_i and δ_t are unit and time fixed effects correspondingly. β is the coefficient capturing the impact of the presence of horizontal constraints H_{it}, λ is the coefficient for the presence of vertical constraints V_{it}, and ϑ is the one capturing the interaction between both. γ_j reports coefficients for up to 8 lags of the dependent variable Y_{it-j}. η is the coefficient for a full set of control variables X'_{it} namely: investment, infant mortality, human capital, trade, fiscal revenue, social unrest, and market reforms. Finally, ε_{it} is the error term.

4 Descriptive Statistics and Estimates

Figure 2 depicts the relationship between GDP per capita and four measures of executive constraints. The upper panels present measures according to Lührmann, Marquardt, and Mechkova (2020), and the lower panels present Polity IV measures. Countries are
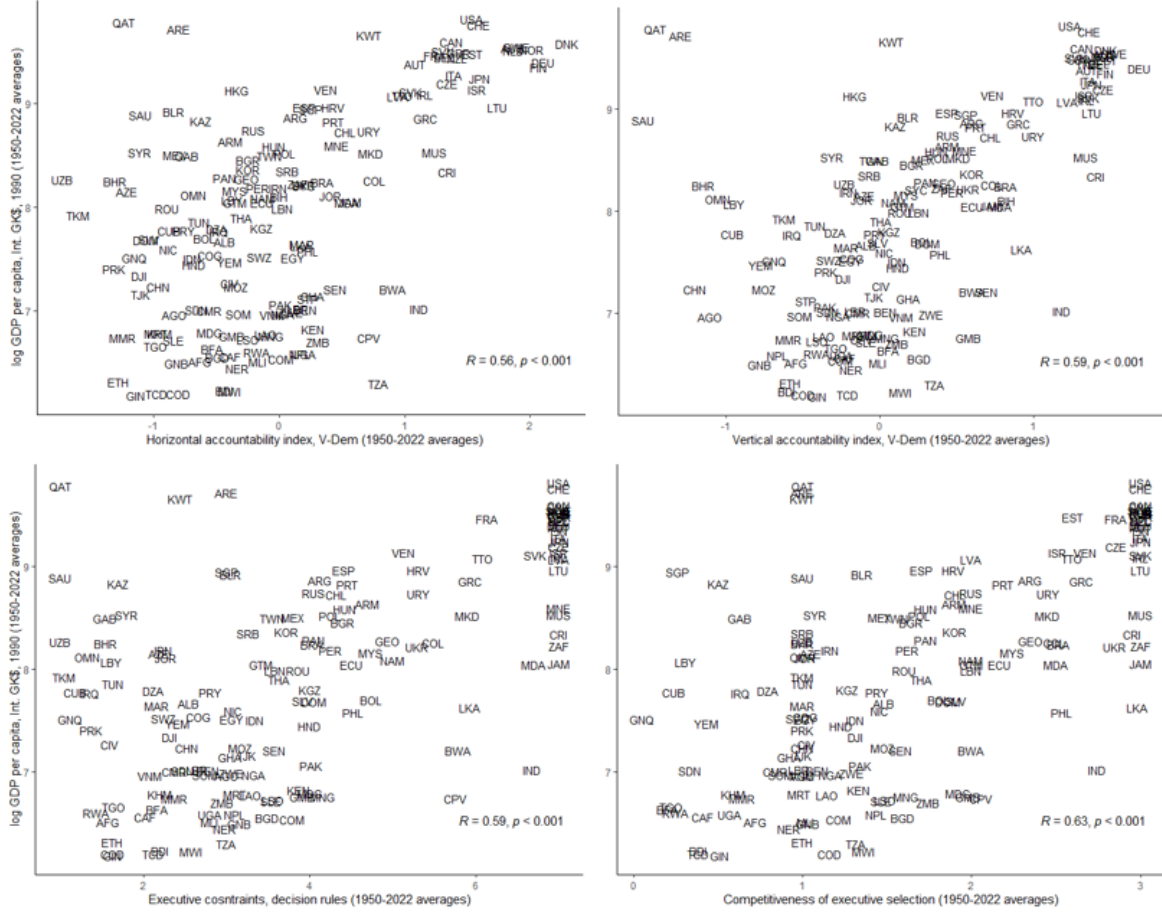
Figure 2: Both panels depict the relationship between sample averages of executive constraints and the log of GDP per capita. In the upper panels, I used horizontal and vertical accountability indexes constructed by Lührmann, Marquardt, and Mechkova (2020). In the lower panels, both constraints were measured according to Polity IV. GDP information was obtained from Bolt et al. (2018).

reported with their respective abbreviations based on the World Bank nomenclature. For each plot, a Pearson correlation coefficient and its respective p-value have been computed (reported in the lower right corner of the graph). Descriptively, all measures of executive constraints seem to have significantly positive correlations with GDP per capita. This suggests that the more restricted the executive is in a country, the higher its level of growth as measured by the natural logarithm of GDP per capita. I also identified some important outliers such United Arab Emirates, Kuwait and Qatar.

Figure 3 reports a box plot with information on GDP per capita (Bolt et al. 2018), and the classification of regime varieties presented in Figure 1. To empirically construct each category, I created four dummies from the dichotomous measures of horizontal and vertical constraints derived from Polity IV (see explanation above). Therefore, a country i is coded as having both constraints – and thereof labeled as a democratic regime – when both horizontal and vertical measures are equal to 1 in time t. The country is coded as 0
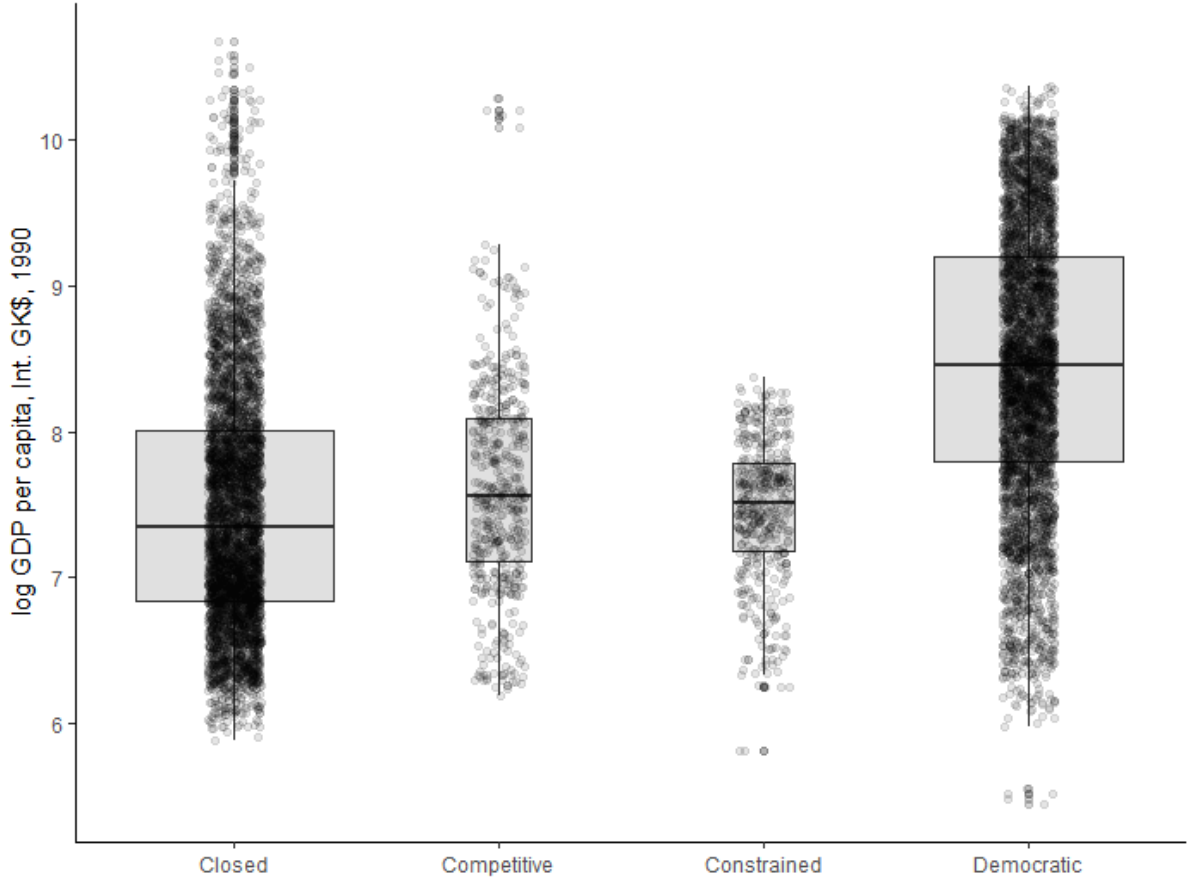
Figure 3: The figure depicts the relationship between GDP per capita and the regime classification obtained from the interaction between horizontal and vertical constraints. Information about GDP per capita was obtained from Bolt et al. (2018), and regime categories were constructed from Polity IV. The sample covers 174 countries ranging from 1800 to 2022. A total of 8232 country-year observations were codified as Closed regimes, 795 observations as Competitive, 794 as Constrained and 5829 as Democratic.

in all remaining cases. The remaining categories follow the same logic based on whether a country is previously coded as having or not either one or both constraints. The pattern of observations represented in this figure fits some of the empirical descriptions already mentioned. Specifically, there is an arguably positive relationship between countries coded as democratic and the level of GDP per capita. The two intermediate categories, namely competitive and constrained regimes report a decreasing relationship, while closed regimes seem to be the worst economic performers.

Figure 4 plots the moderating effect of vertical constraints over horizontal ones. The figure reports a linear regression between GDP and V-Dem measures. The trajectories illustrated reveal that both institutions have a synergistic interaction, but this is only visible when vertical constraints are present. Conversely, the only presence of horizontal constraints (constrained regime) seems to produce a slightly negative impact on growth, compared with cases coded either with vertical ones (competitive regimes) or without
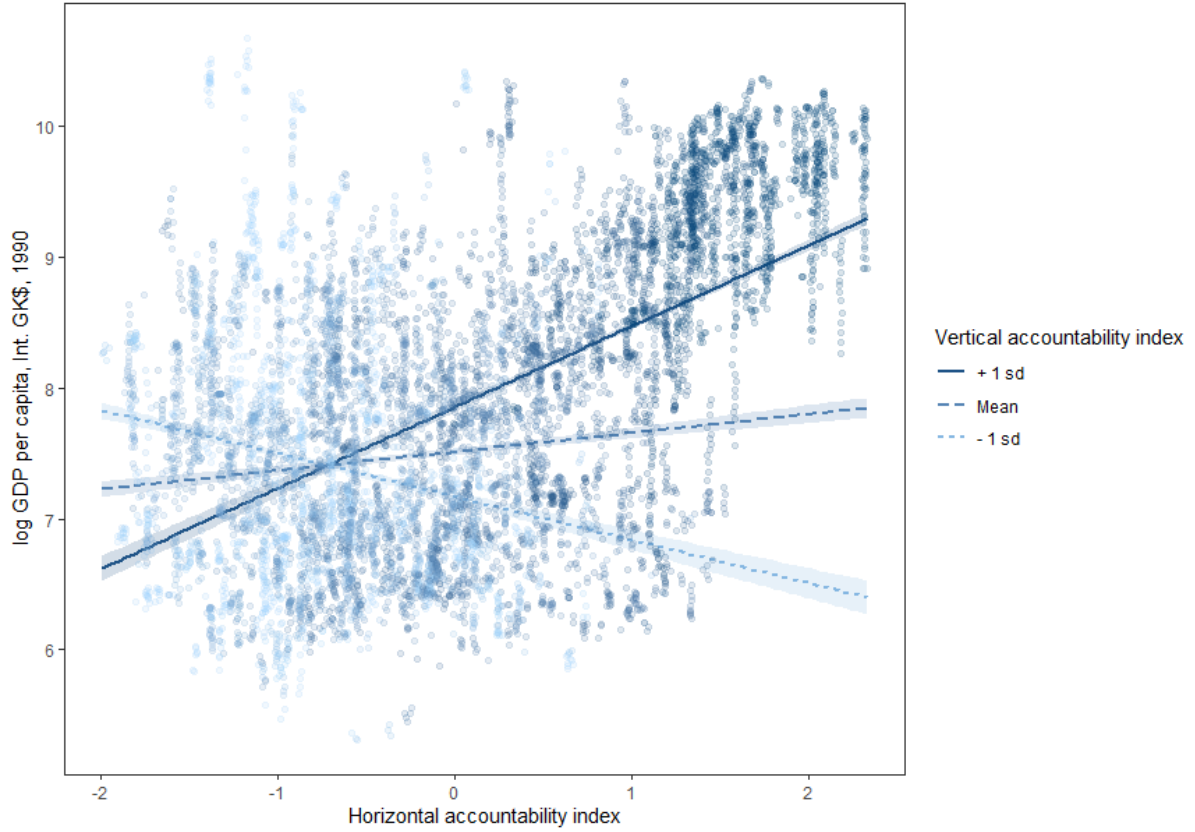
13

Figure 4: The moderating effect of executive constraints on economic growth

vertical ones (closed regimes). These observations have important implications. First, they provide some empirical evidence of a relevant interaction between both institutions, in which their potential combined effect is positive in the presence of vertical constraints. Second, the figure also suggests that the order in which different political institutions are introduced across societies matters for growth.

4.1 Estimation results

The following table reports estimation results from different specifications derived from Equation 1. Table 1 provides within and GMM estimates. All columns present dynamic panels with different lag structures. The dependent variable is the natural logarithm of GDP per capita. Using this logarithmic transformation allows me to interpret the regression coefficients in percentage changes (Angrist and Pischke 2008). Additionally, robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses for all estimates. My preferred specification is the one presented in column 5, which includes four lags of the dependent variable. The coefficient for the presence of horizontal constraints (as measured by Polity IV) is -0.088 (standard error of 0.035). This suggests that the presence of horizontal constraints is associated with a decrease of about 0.088 percent of GDP per capita, conditional on the controls included in the model

and with a 95 percent confidence level. Conversely, the presence of vertical constraints seems to positively influence growth, with a coefficient of 0.073 (standard error of 0.028) and a 99 percent confidence level. Note that as more controls and conditions are added to the model, the effect of the interaction between the two institutions seems to be captured by the effect of vertical constraints. These three effects appear to be insensitive across specifications, suggesting that, ceteris paribus, vertical constraints have a strong positive effect of around 0.073 percent on GDP per capita. Estimates with fixed effects from dynamic panel models such as those presented in columns 1 to 6 of Table 2 have an asymptomatic bias of order 1/T, known as the Nickell bias. This is a product of the violation of the assumption of strict exogeneity in dynamic panel models (Nickell 1981 in Acemoglu et al 2019, 62). Thus, the lags of the dependent variable included in equation 1 may be correlated with the idiosyncratic and non-stochastic characteristics of the cross-sectional units (Montero 2010). Columns 7 to 9 provide estimates with the Generalized Method of Moments (GMM) to address this bias. This estimator uses instrumental variables based on the lag structure of the model and the differences of other independent variables. I tried to use as many instruments as years available based on every model specification and its lag structure. Thus, column 7 reports Blundell and Bond (1998) System GMM estimates using 69 years as instruments, column 8 uses 65 and column 9 uses 57 years. Most importantly, all the patterns observed in the within estimator remain insensitive, namely the negative impact of horizontal constraints and the positive effect of vertical ones.

Table 1: Effect of executive constraints on (log) GDP per capita

	Unit fixed effects			Unit and time fixed effects			System GMM Blundell and Bond (1998)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Horizontal constraints, p5	−.091***	−.087**	−.093**	−.095***	−.088**	−.092**	−.098**	−.091**	−.093**
	(.034)	(.035)	(.039)	(.036)	(.035)	(.039)	(.047)	(.041)	(.047)
Vertical constraints, p5	.083***	.079***	.067**	.070***	.073***	.065**	.099***	.097***	.087***
	(.027)	(.029)	(.029)	(.025)	(.028)	(.028)	(.029)	(.027)	(.028)
Horizontal × Vertical	.096***	.078**	.089**	.082**	.068*	.079*	.188***	.149***	.158***
	(.035)	(.037)	(.040)	(.038)	(.039)	(.041)	(.055)	(.047)	(.053)
Investment share of GDP	.749***	.787***	.864***	.806***	.826***	.899***	.738***	.723***	.829***
	(.145)	(.149)	(.158)	(.147)	(.150)	(.160)	(.076)	(.073)	(.079)
Infant mortality rate	−.0005	−.0003	−.0005*	−.0003	−.0002	−.0004	−.002***	−.001***	−.001***
	(.0003)	(.0003)	(.0003)	(.0002)	(.0002)	(.0003)	(.0002)	(.0002)	(.0002)
Human capital index	.143***	.126***	.131***	.121***	.110***	.119***	.212***	.166***	.153***
	(.031)	(.034)	(.036)	(.031)	(.033)	(.035)	(.020)	(.020)	(.018)
Trade share of GDP	.046***	.033*	.026	.051***	.038**	.029*	.019	.010	.005
	(.017)	(.017)	(.020)	(.015)	(.015)	(.017)	(.016)	(.013)	(.012)
TFP in const. nat. prices	.280***	.265***	.273***	.288***	.270***	.275***	.293***	.247***	.237***
	(.059)	(.057)	(.059)	(.058)	(.056)	(.058)	(.033)	(.034)	(.032)
Tax revenue share of GDP	.459***	.396***	.388***	.415***	.389***	.401***	.714***	.582***	.540***
	(.095)	(.098)	(.100)	(.090)	(.095)	(.098)	(.090)	(.086)	(.084)
Social unrest	−.034***	−.030***	−.027***	−.028***	−.027***	−.024***	−.035***	−.030***	−.024**
	(.009)	(.009)	(.009)	(.009)	(.009)	(.009)	(.011)	(.010)	(.011)
R2/Sargan p-value for GMM	.553	.567	.546	.403	.428	.423	1	1	1
R2 Adjusted	.545	.559	.537	.390	.415	.409			
Observations	11,437	11,089	10,393	11,437	11,089	10,393	22,700	22,004	20,612
Countries in the sample	174	174	174	174	174	174	174	174	174
Number of years	22-71	20-69	16-65	22-71	20-69	16-65			

*Significance levels: *p<0.1; **p<0.05; ***p<0.01*

Note.– The table presents estimates of the effect of executive constraints on the natural logarithm of GDP per capita. Columns 1-3 present the results for individual fixed effects, columns 4-6 for individual and time fixed effects, and columns 7-9 for the Blundell and Bond (1998) System GMM estimator. Robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses. Columns 1 to 6 also account for cross-sectional dependence as specified in Driscoll and Kraay (1998). All columns present results from a dynamic panel, columns 1, 4 and 7 include two lags of the dependent variable, columns 2, 5, and 8 include four, and columns 3, 6 and 9 include eight lags. The sample covers a total of 174 countries from 1950 to 2022. Column 7 uses 69 years as instruments, column 8 uses 65 and column 9 uses 57 years as instruments.

5 Conclusion

In recent years, the case for democracy has been strengthened by the accumulation of scientific contributions and evidence pointing to it as a fundamental source of growth. However, we still don't have conclusive arguments about what aspect of democratic politics is driving such a development effect. The main contribution of this research is to uncover how particular components of democracy influence growth separately and jointly and identify the channels through which these institutions may influence development. I take influential academic contributions that use Dahl's Polyarchy theory to construct a regime classification based on the interaction between horizontal and vertical constraints. These institutions are important for development as they impose control on rulers, reducing the fundamental problem in which a government strong enough to protect individual rights is also strong enough to transgress them (Weingast 1993; 1995). Horizontal constraints provide investors with a credible signal that the state will not arbitrarily use its confiscatory capacity. Vertical constraints may foster growth through three different channels. Electoral accountability should reduce state predation and incentivize incumbents to align their preferences with the preferences of the citizenry. Participatory institutions may also improve resource allocation and the median voter from more inclusive societies should have incentives for redistributive pressures that can be transformed into public goods. This research provides evidence of an empirically relevant interaction between democracy components, in which participatory broad-based inclusive institutions seem to be more relevant for development than liberal and elite inclusive ones. Therefore, I challenge the academic consensus claiming the economic superiority of horizontal constraints over other democracy components. I find evidence that supports hypothesis 1 and partly supports hypothesis 3. Particularly, horizontal constraints negatively affect growth when vertical constraints are not present. The next step would be to evaluate the channels between each constraint and the sources of growth. Further research could examine whether these two institutions compete in moderating physical and human capital stocks and analyze whether the sequence in which they emerge in society matters for other social and economic outcomes.

References

Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2001. "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91, no. 5 (December): 1369–1401.

Acemoglu, Daron, Simon Johnson, and James A. Robinson. 2005. "Institutions as a Fundamental Cause of Long-Run Growth." In *Handbook of Economic Growth,* edited by Aghion Philipe and Durlauf Steven N., vol. 1A, 387–472. Elsevier.

Acemoglu, Daron, Suresh Naidu, Pascual Restrepo, and James A. Robinson. 2019. "Democracy Does Cause Growth." *Journal of Political Economy* 127, no. 1 (February): 47–100.

Acemoglu, Daron, and James A. Robinson. 2012. *Por qué fracasan los países: los orígenes del poder, la prosperidad y la pobreza.* Barcelona: Deusto, Grupo Planeta.

Alexandra Boese, Vanessa, and Matthew Charles Wilson. 2023. "Contestation and participation: Concepts, measurement, and inference." *International Area Studies Review* 26, no. 2 (June): 89–106.

Angrist, Joshua D, and Jörn-Steffen Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist's Companion.* Princeton University Press.

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

———. 1996. "Democracy and Growth." *Journal of Economic Growth* 1 (1): 1–27.

Benhabib, Jess, and Adam Przeworski. 2010. "Economic growth under political accountability." *International Journal of Economic Theory* 6, no. 1 (March): 77–95.

Bernanke, Ben S. 1983. "Irreversibility, Uncertainty, and Cyclical Investment." *The Quarterly Journal of Economics* 98 (1): 85–106.

Besley, Timothy, and Masayuki Kudamatsu. 2006. "Health and Democracy." *The American Economic Review* 96 (2): 313–318.

Blundell, Richard, and Stephen Bond. 1998. "Initial conditions and moment restrictions in dynamic panel data models." *Journal of Econometrics* 87, no. 1 (November): 115–143.

Boese, Vanessa Alexandra, Scott Gates, Carl Henrik Knutsen, Håvard Mokleiv Nygård, and Håvard Strand. 2022. "Patterns of Democracy over Space and Time." *International Studies Quarterly* 66, no. 3 (September).

Bolt, Jutta, Robert Inklaar, Herman de Jong, and Jan Luiten van Zanden. 2018. *Rebasing Maddison: New Income Comparisons and the Shape of Long–Run Economic Development.*

Bueno de Mesquita, Bruce, and Alastair Smith. 2011. *The Dictator's Handbook: Why Bad Behavior is Almost Always Good Politics.* Nueva York: Public Affairs.

Bueno de Mesquita, Bruce, Alastair Smith, Randolph M Siverson, and James D Morrow. 2003. *The Logic of Political Survival.* The MIT Press.

Canes-Wrone, Brandice, and Jee-Kwang Park. 2014. "Elections, Uncertainty and Irreversible Investment." *British Journal of Political Science* 44, no. 1 (January): 83–106.

Canes-Wrone, Brandice, Christian Ponce de León, and Sebastian Thieme. 2023. "Institutional constraints on the executive, investment, and elections." *Presidential Studies Quarterly* 53, no. 2 (June): 273–292.

Cassani, Andrea. 2019. "Autocracies and Human Development."

Colagrossi, Marco, Domenico Rossignoli, and Mario A. Maggioni. 2020. "Does democracy cause growth? A meta-analysis (of 2000 regressions)." *European Journal of Political Economy* 61 (January).

Coppedge, Michael, John Gerring, Carl Henrik Knutsen, Staffan I Lindberg, Jan Teorell, David Altman, Michael Bernhard, et al. 2023. *V-Dem Codebook v13.*

Cox, Gary W., and Barry R. Weingast. 2018. "Executive Constraint, Political Stability, and Economic Growth." *Comparative Political Studies* 51, no. 3 (March): 279–303.

Dahl, Robert A. 1971. *Polyarchy; participation and opposition* [in eng]. New Haven: Yale University Press.

Doucouliagos, Hristos, and Mehmet Ali Ulubaşoğlu. 2008. "Democracy and Economic Growth: A Meta-Analysis." *American Journal of Political Science* 52 (1): 61–83.

Feenstra, Robert C., Robert Inklaar, and Marcel P. Timmer. 2015. "The Next Generation of the Penn World Table." *American Economic Review* 105, no. 10 (October): 3150–3182.

Ferejohn, John. 1986. "Incumbent Performance and Electoral Control." *Public Choice* 50 (1/3): 5–25.

Fjelde, Hanne, Carl Henrik Knutsen, and Håvard Mokleiv Nygård. 2021. "Which Institutions Matter? Re-Considering the Democratic Civil Peace*." *International Studies Quarterly* 65, no. 1 (March): 223–237.

Gandhi, Jennifer. 2008. "Dictatorial institutions and their impact on economic growth." *Archives Europeennes de Sociologie* 49 (1): 3–30.

Gerring, John, Philip Bond, William T Barndt, and Carola Moreno. 2005. "Democracy and Economic Growth: A Historical Perspective." *World Politics* 57 (3): 323–364.

Gerring, John, Carl Henrik Knutsen, and Jonas Berge. 2022. "Does Democracy Matter?"

Gerring, John, Carl Henrik Knutsen, Matthew Maguire, Svend-Erik Skaaning, Jan Teorell, and Michael Coppedge. 2021. "Democracy and human development: issues of conceptualization and measurement." *Democratization* 28, no. 2 (February): 308–332.

Giuliano, Paola, Prachi Mishra, and Antonio Spilimbergo. 2013. "Democracy and Reforms: Evidence from a New Dataset." *American Economic Journal: Macroeconomics* 5, no. 4 (October): 179–204.

Haggard, Stephan, and Robert R. Kaufman. 2020. *Development, Democracy, and Welfare States: Latin America, East Asia, and Eastern Europe.* Princeton University Press.

Hendrix, Cullen S. 2010. "Measuring state capacity: Theoretical and empirical implications for the study of civil conflict." *Journal of Peace Research* 47 (3): 273–285.

Knutsen, Carl Henrik. 2021. "A business case for democracy: regime type, growth, and growth volatility." *Democratization* 28 (8): 1505–1524.

Lindert, Peter H. 2004. *Growing Public.* Cambridge University Press, January.

Lührmann, Anna, Kyle L. Marquardt, and Valeriya Mechkova. 2020. "Constraining Governments: New Indices of Vertical, Horizontal, and Diagonal Accountability." *American Political Science Review* 114, no. 3 (August): 811–820.

Marshall, Monty G., and Ted Robert Gurr. 2020. *Polity 5. Political Regime Characteristics and Transitions, 1800-2018. Dataset Users' Manual.*

Miller, Michael, Carles Boix, and Sebastian Rosato. 2022. *Boix-Miller-Rosato Dichotomous Coding of Democracy, 1800-2020.*

Miller, Michael K. 2015. "Electoral authoritarianism and human development." *Comparative Political Studies* 48, no. 12 (January): 1526–1562.

Mulligan, Casey B, Ricard Gil, and Xavier Sala-i-Martin. 2004. "Do Democracies Have Different Public Policies than Nondemocracies?" *Journal of Economic Perspectives* 18, no. 1 (February): 51–74.

North, Douglass C, and Barry R Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *The Journal of Economic History* 49 (4): 803–832.

North, Douglass C. 1990. *Institutions, Institutional Change and Economic Performance.* Cambridge University Press, October.

North, Douglass C., and Robert Paul Thomas. 1973. *The Rise of the Western World.* Cambridge University Press, September.

Papaioannou, Elias, and Gregorios Siourounis. 2008. "Democratisation and Growth." *The Economic Journal* 118 (532): 1520–1551.

Pinto, Pablo M., and Jeffrey F. Timmons. 2005. "The political determinants of economic performance political competition and the sources of growth." *Comparative Political Studies* 38, no. 1 (February): 26–50.

Przeworski, Adam, Michael E. Alvarez, Jose Antonio Cheibub, and Fernando Limongi. 2000. *Democracy and Development.* Cambridge University Press, August.

Rodrik, Dani, Arvind Subramanian, and Francesco Trebbi. 2004. "Institutions Rule: The Primacy of Institutions Over Geography and Integration in Economic Development." *Journal of Economic Growth* 9, no. 2 (June): 131–165.

Stasavage, David. 2002. "Private Investment and Political Institutions." *Economics and Politics* 14, no. 1 (January): 41–63.

Wang, Yi Ting, Valeriya Mechkova, and Frida Andersson. 2019. "Does Democracy Enhance Health? New Empirical Evidence 1900–2012." *Political Research Quarterly* 72, no. 3 (September): 554–569.

Weingast, Barry R. 1993. "Constitutions as Governance Structures: The Political Foundations of Secure Markets." *Journal of Institutional and Theoretical Economics (JITE) / Zeitschrift für die gesamte Staatswissenschaft* 149 (1): 286–311.

———. 1995. "The Economic Role of Political Institutions: Market-Preserving Federalism and Economic Development." *Journal of Law, Economics, & Organization* 11 (1): 1–31.

Wright, Joseph. 2008. "Do authoritarian institutions constrain? How legislatures affect economic growth and investment." *American Journal of Political Science* 52, no. 2 (April): 322–343.