

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

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Work in progress

Abstract

Most work in regime effects focuses on whether democracy matters for development. However, although the vast academic production it remains unclear what aspects of regimes are producing such an outcome. This problem arises partly because scholars use unidimensional 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 powers of the parliament to control the executive, whereas vertical constraints are the capacity of citizens to keep their ruler 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 foster growth, vertical constraints appear to be driving such an effect. These patterns remain unsensitive across specifications using within and GMM estimators. 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.

Keywords: Democracy, executive constraints, institutions, economic growth

Introduction

Scholars widely contend that securing property rights and enforcing contracts have a positive effect on long-term growth (Acemoglu, Jonhson 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 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 comparing to autocracies (Alvarez et al. 2000; Gerring et al. 2005; Doucouliagos and Ulubasoglu 2008), or an overwhelmingly superiority of democracy in driving societies into the path of development (Papaioannou and Siourounis 2008; Acemoglu et al. 2019; Colagrossi, Rossignoli and Maggioni 2020; Knutsen 2021; Gerring, Knutsen and Berge 2022).

These ambiguous and heterogeneous results are partly because scholars treat regimes as concepts that comprise a whole range and varieties of institutions. These approaches use unidimensional measures of democracy that directly neglect the complex and varied nature of regime evolution. Examining executive constraints provides the ideal framework to unveil the paths through which specific regime components affect growth, while capturing greater patterns of political

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transformations 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 how and 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 ruler 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 the presence of both constraints fosters growth, vertical constraints seem to be driving such an effect, increasing GDP 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. Finally, scholars could also evaluate whether the sequence in which democracy components evolve in society could matter for other social and economic outcomes.

1. Work on democracy and growth

The problems surrounding the democracy-growth literature can be explained by how the relationship is modeled, researcher's decisions about measurement and sample selection, econometric complexity, and the level of institutional variation captured in the analysis. First, on the question on whether there is a direct or indirect effect of democracy, scholars suggest that if a set of institutions as such is important, it should influence growth through the sources that determine growth. For instance, Przeworski and Limongi (1993) examine four channels namely, property rights, investment, state autonomy and ruler's predation. Tavarez and Wacziarg (2001) find that democracy promotes growth through human capital but has a negative effect on physical

capital. Pinto and Timmons (2005) reach similar conclusions asserting that political competition discourages physical capital and labor supply, but it encourages human capital and productivity. Finally, Knutsen (2012) pinpoints property rights, rulers' predation, human capital, and technological innovation as factors in which democracies completely outperform autocracies.

Scholars not only have to deal with the challenge to uncover the path by which democracy affects growth, but to face several methodological issues. Doucouliagos and Ulubasoglu (2008, 76) already anticipated that the reported democracy-growth effect depends on how a regime is measured, with studies using dichotomous indicators reporting larger effects than the ones using continuous measures. Knutsen (2012) highlights other issues, such as sample-selection biases that do not account for certain geographical, cultural, and political-historical factors. Other issues include the need to control sources (channels) of prosperity, modelling the temporal dimension of both democracy and growth, as well as for initial levels of growth. Because institutions are endogenously designed by human interaction, scholars had to find ways to address the daunting task of determining causality. Acemoglu, Johnson and Robinson (2001) use of settler mortality as instrument for institutions is perhaps the most important econometric contribution in the field. Recent research uses a similar approach by defining exogenous variations of democracy, such as regional waves of democratization and reversals to autocracy (Gründler and Krieger 2016; Acemoglu et al. 2019; Dorsch and Maarek 2019), regional pressures for diffusion of institutions (Weyland 2008; Miller 2014; Bizzarro et al. 2018;), regime type history or inheritance of institutional forms (Gandhi 2008; Pepinsky et al. 2014; Jensen et al. 2014; Miller 2015), and the "genetic distance" across countries (Spolaore and Wacziarg 2016; Sima and Huang 2023).

Heterogeneous results surrounding the cases for and against democracy have raised awareness regarding the need to unpack the regime-growth link by discussing the role of specific institutions. As Knutsen (2012, 398) asserts "an analysis of variation in economic outcomes within the political regime categories may be at least equally as interesting as an analysis of the general effect of regime type on growth." Accordingly, relevant work has focused on institutional variations such as forms of government and rules/features of electoral systems (Persson and Tabellini 2005). Bizzarro et al. suggest that strong political parties have a positive effect on growth¹ by enhancing politicians to "engage in responsible economic management, provide public goods, and ensure political stability" (2018, 310). Zuazu (2018) shows that the reducing effect of political equality on income inequality is stronger under non proportional representation systems than in proportional ones. Cornell, Knutsen and Teorell (2020) test if features of the Weberian bureaucracy enhance growth, finding mostly no significant support for such argument.

Other studies examine the impact of political institutions working under dictatorships. Gandhi (2008) suggests that dictatorships with legislatures and parties should relief the elite's concerns about credible commitments and political stability, what may encourage investment. These regimes would have better economic performance than their non-institutionalized counterparts. Wright

¹ Particularly, their analysis suggests that "a one-point increase in their party strength index boost GDP per capita growth the subsequent year by about 1.4 percentage points" Bizzarro et al. (2018, 296).

(2008) further developed this question by showing that binding legislatures have a positive impact on economic growth and domestic investment, as opposed to non-binding legislatures. Using Polity IV measures, Chandra, and Kudra (2013) provide empirical evidence that countries with high levels of public deliberation experience more stable growth outcomes. Finally, Knutsen (2018) finds that single-party autocracies grow at higher rates than personalist regimes and monarchies.

In sum, scholars continue to find ambiguous and heterogeneous results despite data availability and econometric innovations. This problem arises partly because researchers use composite democracy indicators, even when they are accounting for the impacts of specific regime components. As Boese et al. (2022, 2) pinpoint, these indices “typically rely on indicators tapping into different regime dimensions, but then aggregate the information from all dimensions into one composite score, thus masking the concept’s multidimensionality.” Accordingly, it could be the case that studies that have relied almost exclusively on conventional unidimensional indicators are underestimating the potential impact of a whole range and varieties of institutions, preventing us from accessing which one is driving most of these effects. Some studies have tried to solve this problem by focusing on a particular regime component such as executive constraints, multiparty elections, or suffrage extension. However, they tend to analyze them in isolation without considering the complex evolution of regimes and the varieties of institutional configurations that may arise from their interaction. Highlighting almost exclusively the role of one component over the other may explain why studies find such heterogeneous results in such different sets of outcomes.

In the next section I unpack regime components to address their roles separately and jointly. I distinguish two sets of political institutions that produce different forms of constraints. Horizontal constraints are defined as checks imposed on rulers from institutions functioning at the same level of political influence, whereas vertical constraints are defined based on Dahl’s (1971) polyarchy dimensions, namely contestation and participation. I then construct some theoretical expectations about their potential economic roles and assess their interaction. Contributions are two-fold. I provide a theoretical framework that may shed light to the heterogeneity of results produced by researchers’ decisions. I also uncover how particular components of democracy influence growth separately and jointly and identify the channels through which these institutions may lead societies on the path to prosperity.

2. Unpacking the democracy-growth link

Regime evolution is complex in 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 disaggregated measurement strategies when studying the role of certain democracy aspects (Cox and Weingast 2018; Gerring et al. 2020; Fjelde, Knutsen, and Nygård 2021). Studies have also unpacked features such as accountability (Lührmann, Marquardt and Mechkova 2020), and polyarchy dimensions

(Boese and 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.

Executive constraints may provide the ideal framework to study the impact of specific regime components while capturing 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 solved 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 links 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 in 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. Varieties of regimes from a two-dimensional approach

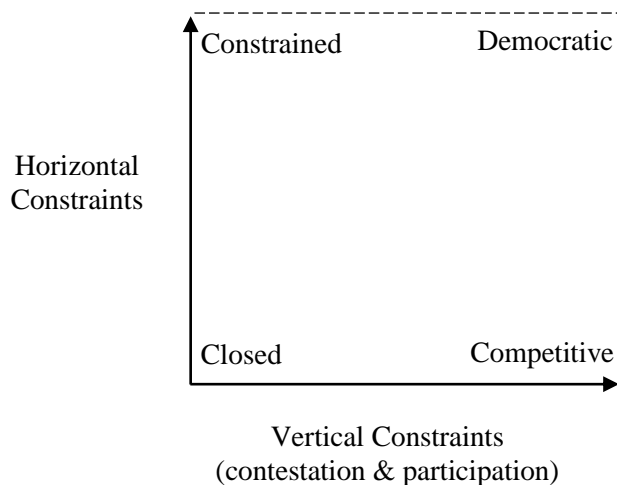


Figure 1 depicts a basic regime representation inspired by Dahl's two-dimensional regime typology. Recall that horizontal constraints are treated as checks on rulers functioning at a same level of political influence (i.e., legislatures or judiciary), while vertical constraints refer to the classical dimensions of electoral democracy, namely contested elections, and the extent of political participation (Dahl 1971). In this sense, my definitions resemble those proposed by Fjelde, Knutsen, and Nygård (2021). 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 constraining institutions. Rulers in such settings face more checks on their behavior, but the regime remains non-inclusive as having 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, 7), 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 regime composition. On the other hand, I could take Boese et al. (2022) contribution to construct these varieties from a three-dimensional approach, 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.

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 authoritarian rule, as they serve as instruments of elite cooptation and policy concession (Gandhi 2008).

The study of 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"² 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

² For Sanchez-Cuenca, a commitment is "a manipulation of your set of alternatives enabling you to achieve an outcome that would be impossible to attain in the absence of the commitment" (1998, 79-80). This manipulation adopts two forms: constraining our available sets of alternatives or imposing high costs on some of those alternatives.

(i.e., property rights), something that, in the absence of the commitment, he would not have incentives to do.

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, 42) 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 nonbinding 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, Canes-Wrone and Ponce de Leon claim that democratic development should reduce “inverse electoral investments and opportunistic business cycles” (2015, 19). 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 (2017) evaluate whether executive constraints separately affect growth through political stability. They conclude that for reducing 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 2017, 280). Using a panel of 57 developing democracies from 1975 to 2017, Canes-Wrone, Ponce de Leon 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 (Canes-Wrone, Ponce de León and Thieme 2023).

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.³ 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

³ This idea can be traced back to Machiavelli who observed that “riches (...) multiply because everyone applies himself to increase his own, as long as he can freely enjoy them.” Discourses on the First Decade of Titus Livy, Book Two, Chapter II, pp. 154. 1873. 1873. For another reference see North and Thomas (1973).

configurations should experience higher levels of growth through investment than others not having such institutions. Hence, my first hypothesis stands as follow:

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, 19) 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; 1999) 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, Benhabib 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 would have the capacity to remove them from office, generating political incentives for better public governance (Benhabib and Przeworski 2010, 79).

Decentralized broad-based participatory institutions can also produce efficient resource allocation and better provision of public goods. These institutions are channels through which organized citizens can translate their demands into concrete political results (Abers 2000; Fung and Wright 2003; Avritzer 2006, 2010; Zaremborg, Laval, and Guarneros-Meza 2017). Some studies suggest that the implementation of participatory institutions such as *Gram Sabha* in India, or the participatory budgeting in Brazil have a strong positive effect on different outcomes such as public spending, tax revenue, living standards, social benefits, and the supply of specific goods (Besley, Pande and Rao 2005, 2007; Gonçalves 2014; Touchton, Wampler and Peixoto 2020).

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, 32). 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) that 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 and Sala-i-Martin 2004; Haggard and Kaufman 2008), 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 increases 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, 19) 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/competitive electoral institutions may influence growth through 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 depicted the varieties of institutional settings as products of a bi-dimensional plane. This approach helps us to identify 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, but 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 investment reducing incentives for public goods provision, while competitive ones may enhance human development but not presenting 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 and van Zanden 2014), 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 Polity 5 *xconst* variable which describes the degree of checks and balances between the various parts of the government on a 7-point scale. Marshall and Gurr asserts that this variable refers to “the extent of institutional constraints⁴ on the decision-making powers of the chief executive, whether an individual or a collective executive” (2020, 61). They explain that their notion of executive

⁴ “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).

constraints 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 (2017). Therefore, I construct a dummy from *xconst* variable which is equal to 1 when country *i* in time *t* has “substantial limitations” (*xconst* = 5), the observation fits 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 Fjelde, Knutsen, and Nygård (2021) approach to construct a horizontal constraints indicator (*hci*). This variable is computed as the average of two V-Dem indices capturing *legislative constraints on the executive* (*v2xlg_legcon*) and *judicial constraints on the executive* (*v2x_jucon*). Both variables range from 0 to 1 and measure the *de facto* capabilities of the legislature and the judiciary to effectively monitor and hold the executive accountable. The legislative constraints index is formed by taking the point estimates from a Bayesian factor analysis model of four indicators, namely the extent to which the legislature questions officials in practice, executive oversight, the extent to which the legislature investigates in practice, and legislature opposition parties. The judicial constraints index is also constructed from a Bayesian factor analysis from five variables, such as whether the executive respects the constitution, compliance with high court, and whether the high court and the lower court are independent (Coppedge et al. 2023b, 51). I agree on the idea that both mid-level indices behave as partial substitutes when it comes to determining the degree of horizontal constraints (Fjelde, Knutsen, and Nygård 2021, 229). This means that even though a country would need high scores of both components to be considered as having strong horizontal constraints, the presence of one of them can still constrain a ruler’s behavior in the absence of the other.

3.2. Vertical Constraints

I measure vertical constraints using three approaches. First, I classify a country as vertically constrained when Boix, Miller 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” (2012, 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 (2017), 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) (Marshall and Gurr 2020, 20).

Alternatively, I draw again on Fjelde, Knutsen, and Nygård to construct a vertical constraints index (*vci*) that reflects the extent to which a country has both “free and fair elections and inclusive citizenship” (2021, 228). This variable is constructed using a multiplicative aggregation formula based on 5 mid-level V-Dem indices: suffrage, elected officials, freedom of association, freedom of expression and clean elections. The first indicator refers to the share of adult population with *suffrage* (*v2x_suffr*). The *elected officials index* (*v2x_elecoff*) measures whether the chief executive and the legislature is – directly or indirectly – elected through popular elections. The *freedom of association index* (*v2x_frassoc_thick*) takes six indicators that reflect the autonomy, bans and barriers to political parties, multiparty elections and entry/exit and repression of civil society organizations. *Freedom of expression and alternative sources of information* (*v2x_freexp_altinf*) takes nine indicators capturing different aspects of press and media freedom, freedom of discussion and freedom of academic and cultural expression. The *clean elections index* (*v2xel_frefair*) refers to the absence of registration fraud, systematic irregularities, government intimidation of the opposition, vote buying and election violence (Coppedge et al. 2023b, 47-50). I also agree with the multiplicative aggregation logic drawn in Fjelde, Knutsen, and Nygård (2021) to cope with the role of vertical constraints. One of the most important notions behind this concept is that these institutions must serve as instruments for vertical accountability to occur. For instance, clean elections may enhance accountability only if most of the population enjoy the right to vote, or freedom of expression and association are important only if clean elections are held. As Fjelde, Knutsen, and Nygård (2021, 228) argue “all factors are required to ensure that the chain of accountability operates and thus that truly binding vertical constraints on executive exists.”

3.3. Control variables

As control variables I use those proposed by Papaioannou and Siourounis (2008, 1548), and Acemoglu, Naidu, Restrepo, and Robinson (2019). The first set of controls include 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 et al. (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. 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 2017, 285-286).

As Acemoglu et al. (2019), my specification includes lags of the dependent variable, which allows for controlling for 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 lags of GDP also allows for 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:

$$Y_{it} = \alpha_i + \delta_t + \beta HC_{it} + \lambda VC_{it} + \vartheta(HC \times VC)_{it} + \sum_{j=1}^p \gamma_j Y_{it-j} + \eta X'_{it} + \varepsilon_{it} \quad (1)$$

Where the subscript i reflects the country and t the year. The dependent variable Y_{it} is the natural logarithm of gross domestic product (GDP) per capita measured in 1990 U.S. dollar international prices. α_i is a country-specific fixed effect, and δ_t the year fixed effect, both represented as vectors of dichotomous variables for each cross-sectional and temporal unit. β is the coefficient that captures the impact of horizontal constraints HC_{it} , and λ the impact of vertical constraints VC_{it} . The coefficient ϑ is the effect of the interaction between HC_{it} and VC_{it} . γ_j is the coefficients of p lags of the dependent variable since this value (represented as j) is equal to 1. Similar to Acemoglu et al. (2019), up to a total of 8 lags of GDP per capita are included, so γ_j will reflect regressors from the first lag or when $j = 1$, i.e., Y_{it-1} , through the last lag or when $j = 8$, i.e., Y_{it-8} . η is the coefficient of a set of control variables, X'_{it} described above: investment, infant mortality, human capital, trade, fiscal revenue, social unrest, and market reforms. Finally, ε_{it} is the error term.

4. Preliminary results

Table 1 reports summary statistics for observations coded as democracies and non-democracies based on the dichotomous classification of Boix, Miller and Rosato (2022). Some familiar patterns can be observed such as democracies are on average richer than non-democracies (with a difference of \$5520.69), they also have a much lower infant mortality rate per 1000 births (with a difference of 44.46 percentage points), have a more educated population (with a difference in favor for democracies of 10.93 percent for primary schooling and roughly 35.51 percent for secondary schooling), and have a higher market reforms score than their counterparts (difference of 25.35 points). There appear to be no significant differences in the level of productivity, investment rates, trade, tax revenue and unrest rates (having a slightly higher rate for non-democracies). Finally, it can be observed that for both democracies and non-democracies the average level of horizontal constraints is higher than the level of vertical constraints.

Table 1. Summary statistics

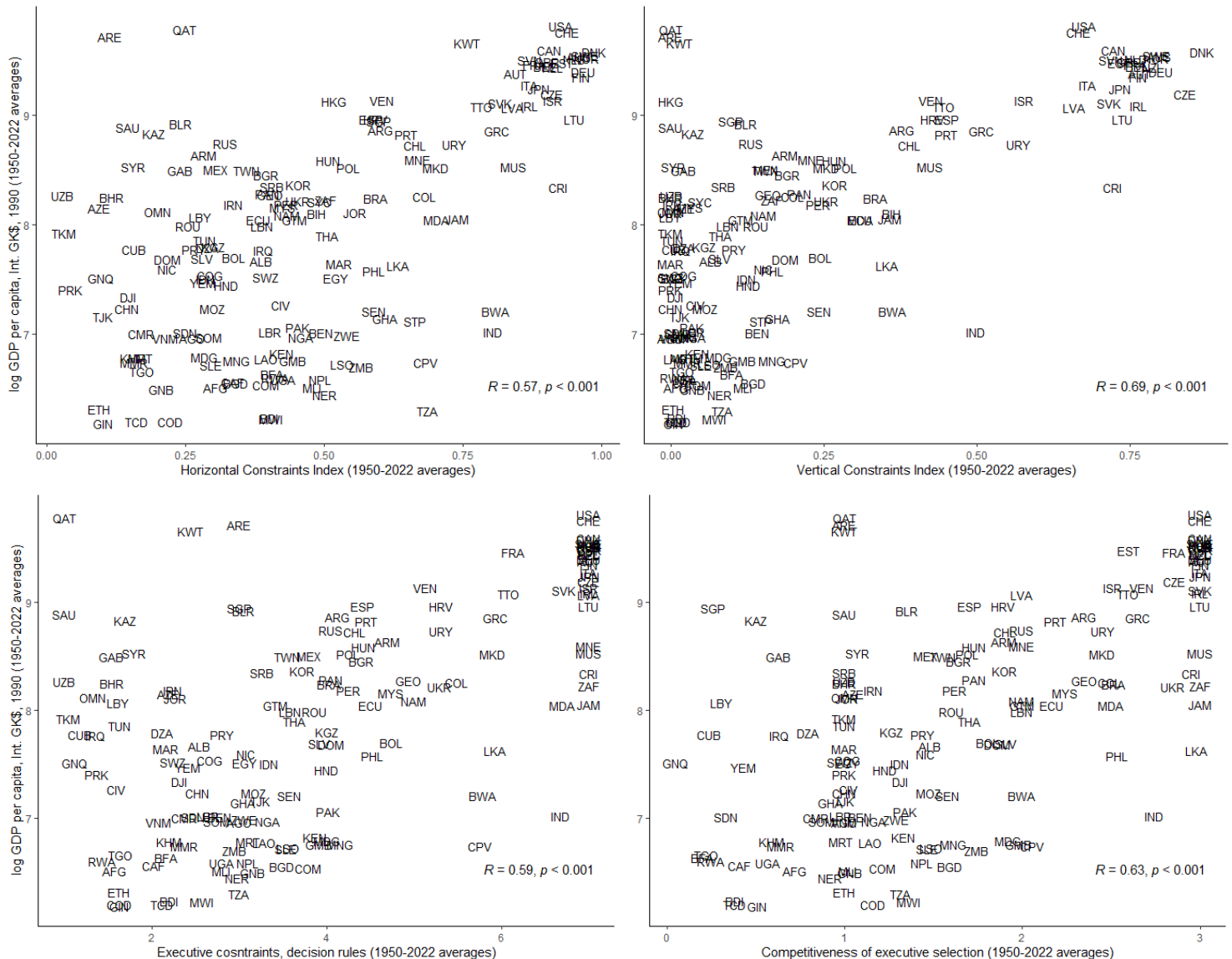
	Non democracies			Democracies		
	N	Mean	St. Dev.	N	Mean	St. Dev.
GDP per capita	4491	2956.44	3703.657	3031	8477.127	6729.312
Horizontal constraints index (0-1)	5540	0.307	0.203	4518	0.784	0.177
Vertical constraints index (0-1)	5558	0.036	0.081	4518	0.565	0.242
Human capital index	4001	1.693	0.542	4034	2.503	0.663
TFP in const. nat. prices	2615	1.095	0.555	3556	0.961	0.24
Investment share of GDP	3576	0.225	0.105	3623	0.236	0.07
Infant mortality rate	4700	72.373	48.517	4120	27.916	30.139
Primary-school enrollment rate	3387	90.934	26.725	3291	101.862	13.761
Secondary-school enrollment rate	2757	46.363	30.559	2915	81.869	29.363
Trade share of GDP	3756	0.702	0.509	3662	0.757	0.456
Tax revenue share of GDP	3133	0.161	0.095	2349	0.209	0.096
Unrest rate	3650	0.303	0.46	3015	0.231	0.421
Market reforms index (0-100)	2895	27.513	23.51	2527	52.858	24.595

Note.— The table presents summary statistics separately for non-democracies (country-year observations for which BMR dichotomous democracy measure is 0) and democracies (country-year observations for which BMR dichotomous democracy measure is 1). The sample covers a total of 174 countries from 1950 to 2022, see the text for a full description of the variables and corresponding sources.

The following figures provide evidence that the moderating impact of executive constraints is not trivial. Figure 2 presents a plot between GDP per capita and four measures of executive constraints. The upper panels present the measures according to Fjelde, Knutsen, and Nygård (2021), and the

lower panels present Polity IV measures. Countries are 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). At least 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 identify some important outliers such as United Arab Emirates, Kuwait and Qatar.

Figure 2. Correlation between executive constraints and economic growth



Note.— Both panels depict the relationship between sample averages of executive constraints and the log of GDP per capita. In the upper panels, horizontal and vertical constraints indexes were constructed according to Fjelde, Knutsen, and Nygård (2021). In the lower panels, both constraints were measures according to Polity IV. GDP information was obtained from Bolt and van Zanden (2014).

Figure 3 reports a box plot with information on GDP per capita (Bolt and van Zanden 2014), and the classification of regime varieties presented in Figure 1. To empirically construct each category, I created for 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 (democratic regime) when both horizontal and vertical measures are equal to 1 in time t . The country is coded as 0 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.

$$Democratic_{it} = \begin{cases} 1, & \text{if } Hconst = 1 \text{ and } Vconst = 1 \\ 0, & \text{Otherwise} \end{cases}$$

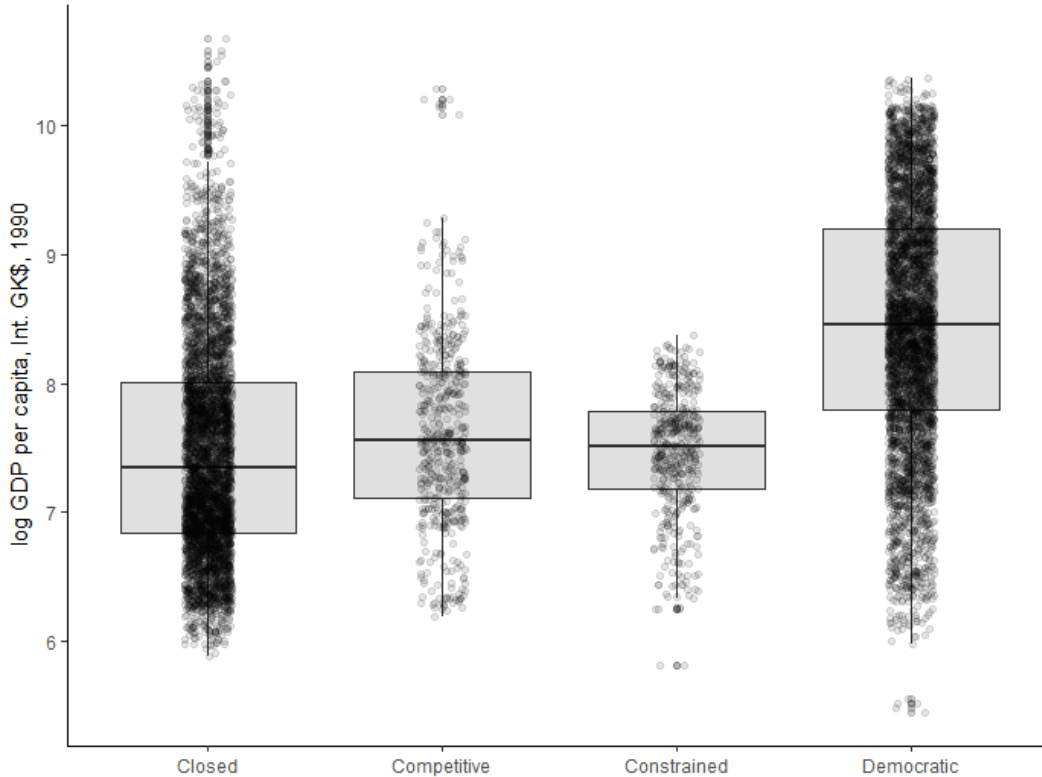
$$Competitive_{it} = \begin{cases} 1, & \text{if } Hconst = 0 \text{ and } Vconst = 1 \\ 0, & \text{Otherwise} \end{cases}$$

$$Constrained_{it} = \begin{cases} 1, & \text{if } Hconst = 1 \text{ and } Vconst = 0 \\ 0, & \text{Otherwise} \end{cases}$$

$$Closed_{it} = \begin{cases} 1, & \text{if } Hconst = 0 \text{ and } Vconst = 0 \\ 0, & \text{Otherwise} \end{cases}$$

The pattern of observations represented in Figure 3 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.

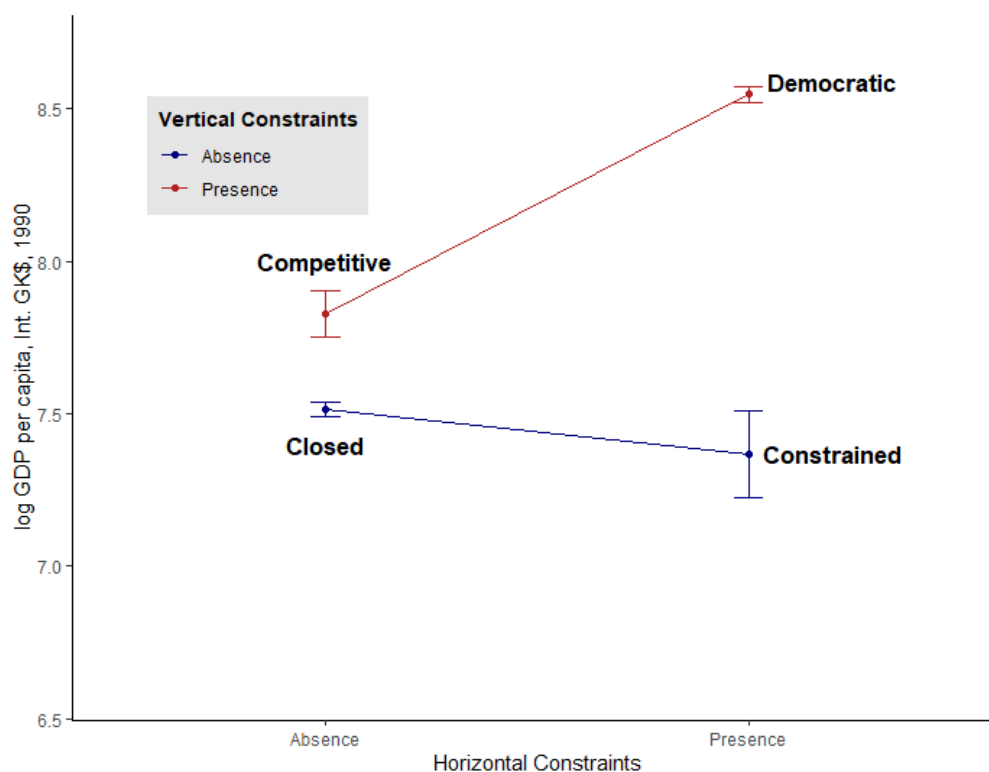
Figure 3. GDP per capita and regime variety



Note.— 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 and van Zanden (2014), 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.

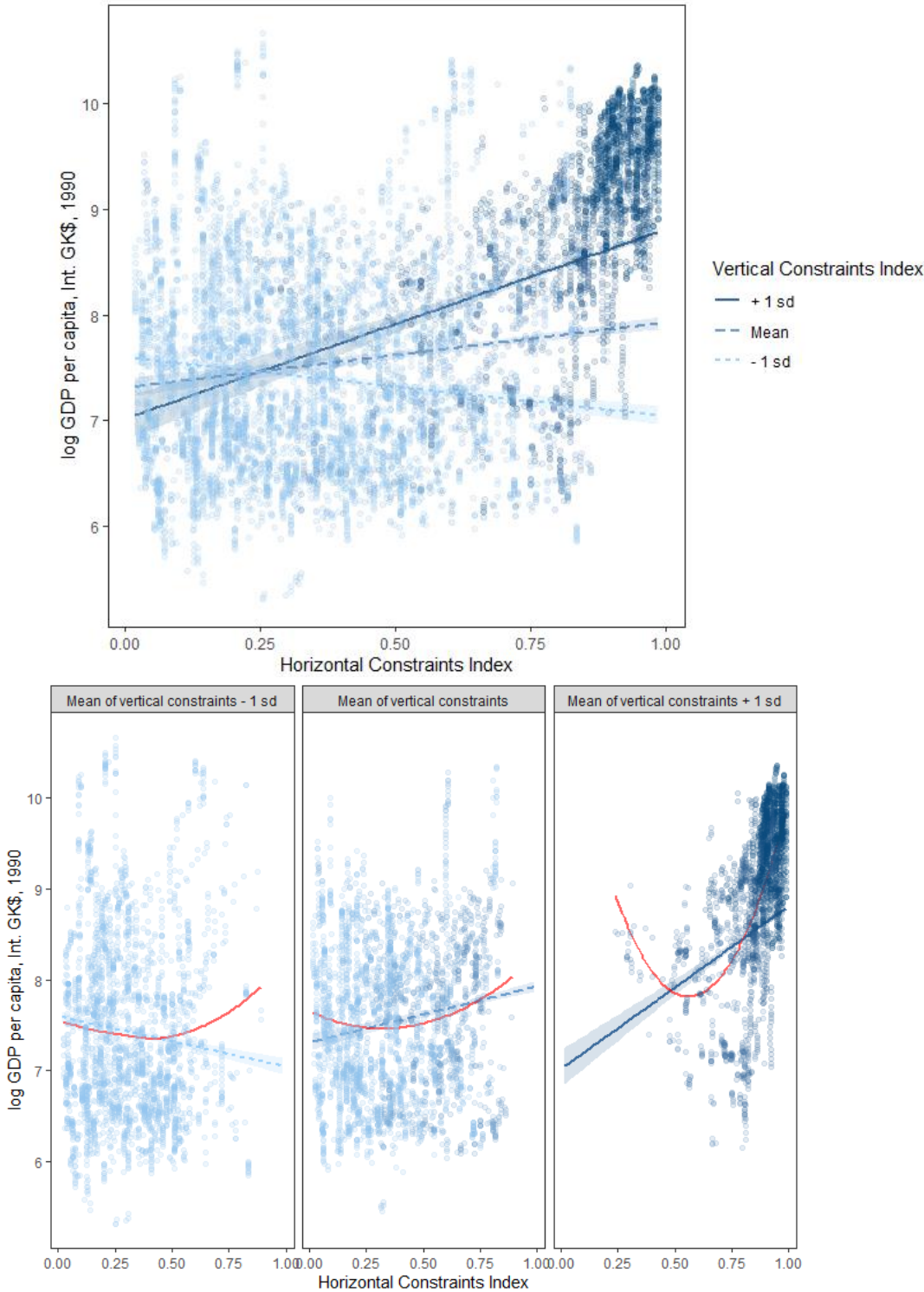
Figure 4 and 5 reports interaction plots for the natural logarithm of GDP per capita as a function of the presence and/or absence of horizontal and vertical constraints. Figure 4 uses the mean for each variable, whereas figure 5 reports a linear regression between GDP and V-Dem measures. The trajectories 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, comparing with cases coded either with vertical ones (competitive regimes), or without vertical ones (closed regimes). These observations have important implications. First, they provide 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.

Figure 4. Relationship between constraints and growth



Note.— Each point depicts the means of log GDP per capita by one of the four possible combinations of the interaction between horizontal and vertical constraints. To construct these variables, I used the codification proposed by Cox and Weingast (2017) (see description above). GDP information came from Bolt and van Zanden 2014.

Figure 5. The moderating effect of executive constraints on economic growth



4.1. Estimation results

Recall Equation 1 presented in the following terms:

$$Y_{it} = \alpha_i + \delta_t + \beta HC_{it} + \lambda VC_{it} + \vartheta(HC \times VC)_{it} + \sum_{j=1}^p \gamma_j Y_{it-j} + \eta X'_{it} + \varepsilon_{it} \quad (1)$$

Here, the key coefficients to interpret the effect of the executive constraints are β , λ , and ϑ . The first two coefficients represent the effect of each type of constraint separately, while the third one reflects the effect of the interaction between both institutions.

The following tables report estimation results from different specifications derived from Equation 1. Table 2 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 us to interpret the regression coefficients in percentage changes (Angrist and Pischke 2015, 60). Additionally, robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses for all estimates. My preferred specification is the one presented in columns 5, which includes four lags of the dependent variable. The coefficient for the presence of horizontal constraints (as measures 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. Noted 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 unsensitive 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 differences of other independent variables (Montero 2010, 1). 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 unsensitive, namely the negative impact of horizontal constraints and the positive effect of vertical ones.

Table 2. The effect of executive constraints on log GDP per capita (fixed effects and GMM estimates)

	OLS with unit fixed effects			OLS with unit and time fixed effects			System GMM Blundell and Bond (1998)		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Horizontal constraints, p5	−.091*** (.034)	−.087** (.035)	−.093** (.039)	−.095*** (.036)	−.088** (.035)	−.092** (.039)	−.098** (.047)	−.091** (.041)	−.093** (.047)
Vertical constraints, p5	.083*** (.027)	.079*** (.029)	.067** (.029)	.070*** (.025)	.073*** (.028)	.065** (.028)	.099*** (.029)	.097*** (.027)	.087*** (.028)
Horizontal × Vertical	.096*** (.035)	.078** (.037)	.089** (.040)	.082** (.038)	.068* (.039)	.079* (.041)	.188*** (.055)	.149*** (.047)	.158*** (.053)
Investment share of GDP	.749*** (.145)	.787*** (.149)	.864*** (.158)	.806*** (.147)	.826*** (.150)	.899*** (.160)	.738*** (.076)	.723*** (.073)	.829*** (.079)
Infant mortality rate	−.0005 (.0003)	−.0003 (.0003)	−.0005* (.0003)	−.0003 (.0002)	−.0002 (.0002)	−.0004 (.0003)	−.002*** (.0002)	−.001*** (.0002)	−.001*** (.0002)
Human capital index	.143*** (.031)	.126*** (.034)	.131*** (.036)	.121*** (.031)	.110*** (.033)	.119*** (.035)	.212*** (.020)	.166*** (.020)	.153*** (.018)
Trade share of GDP	.046*** (.017)	.033* (.017)	.026 (.020)	.051*** (.015)	.038** (.015)	.029* (.017)	.019 (.016)	.010 (.013)	.005 (.012)
TFP in const. nat. prices	.280*** (.059)	.265*** (.057)	.273*** (.059)	.288*** (.058)	.270*** (.056)	.275*** (.058)	.293*** (.033)	.247*** (.034)	.237*** (.032)
Tax revenue share of GDP	.459*** (.095)	.396*** (.098)	.388*** (.100)	.415*** (.090)	.389*** (.095)	.401*** (.098)	.714*** (.090)	.582*** (.086)	.540*** (.084)
Social unrest	−.034*** (.009)	−.030*** (.009)	−.027*** (.009)	−.028*** (.009)	−.027*** (.009)	−.024*** (.009)	−.035*** (.011)	−.030*** (.010)	−.024** (.011)
Log GDP, first lag	.316*** (.029)	.222*** (.023)	.203*** (.026)	.286*** (.025)	.212*** (.020)	.196*** (.024)	.312*** (.018)	.177*** (.023)	.130*** (.026)
Log GDP, second lag	.316*** (.026)	.202*** (.016)	.176*** (.019)	.281*** (.022)	.191*** (.015)	.170*** (.019)	.324*** (.018)	.253*** (.023)	.161*** (.025)
Log GDP, third lag		.162***	.118***		.157***	.118***		.196***	.127***

		(.021)	(.019)		(.020)	(.019)		(.032)	(.031)
Log GDP, fourth lag		.116*** (.018)	.073*** (.019)		.109*** (.019)	.073*** (.019)		.096*** (.022)	.083*** (.025)
Log GDP, fifth lag			.033 (.027)			.032 (.028)			.034 (.028)
Log GDP, sixth lag			.064*** (.024)			.068*** (.025)			.051* (.026)
Log GDP, seventh lag			.030** (.014)			.031** (.015)			.095*** (.022)
Log GDP, eight lag			.010 (.021)			.017 (.027)			.061*** (.023)
R ² /Sargan p-value for GMM	.553	.567	.546	.403	.428	.423	1	1	1
R ² 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.

Some final thoughts

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 driven such 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 uses 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. 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.

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