

# Executive Constraints and Economic Growth

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*Master's Thesis*<sup>†</sup>

## Abstract

Using panel data of 143 countries from 1950 to 2010, this thesis estimates the effects of executive constraints on economic growth. We characterize two types of constraints. Horizontal constraints are linked to the powers of parliament to control the actions of the executive. Vertical constraints are associated with political accountability in which the executive responds to its constituents or the general electorate. By identifying the economic functions of each constraint, a typology of four institutional configurations is proposed. This typology determines the degree to which a ruler is committed to securing individual rights (horizontal constraints function), and accountable to the sanction of citizens (vertical ones function). Fixed effects and GMM estimates suggest that the exclusive presence of horizontal constraints is associated with a decrease of about 0.21 percent of GDP per capita. Vertical Constraints have no significant effect, but the presence of both institutions is associated with an increase of about 0.18 percent of GDP per capita. The results show an empirically relevant interaction between both institutions.

**Keywords:** Constraints on rulers, horizontal and vertical constraints, institutions, growth

## 1. Introduction

Institutional analysis contends that securing property rights and enforcing contracts have a positive effect on economic development (Acemoglu, Johnson and Robinson 2001, 2005; Rodrik, Subramanian and Trebbi 2004; Acemoglu and Robinson 2012). Most of this literature centers on the critical role of economic institutions in reducing transaction costs and enabling individuals to capture the expected gains of voluntary exchange (North and Thomas 1973; North 1990). However, “markets cannot operate in an institutional vacuum” (Johnson and Koyama 2017, 13). For property rights to be secured, there is to be a centralized and powerful enough state to strengthen contract enforcement, resolve coordination failures, and prevent opportunistic behavior from occurring. Thus, not only economic institutions such as markets must provide the basic conditions for development, but the state – and those who govern it – must establish the foundations for them to properly evolve.

This assumption contrasts with the fact that some states could be extremely inefficient in ensuring order in their territory and protecting basic political and economic rights of the citizenry; while others can be so powerful that they could become a major threat to individuals rights (Menard and

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Shirley 2005). As a potential solution to this problem, scholars have seen “political institutions of limited government” as the ideal instrument to reduce the menace of state predation. These institutions, also commonly referred to as “executive constraints”, have been treated as conducive to economic development since they tend to protect individual property rights by ensuring rulers’ credible commitment not to use the state’s coercive power to expropriate private and social assets (North and Weingast 1989).

This thesis examines the effects of executive constraints on economic growth by addressing two questions: To what extent (if any) do they shape economic outcomes? And through which channels are their potential effects produced? We construct a non-monolithic definition of executive constraints that allows us to characterize two well-specified types: Horizontal and Vertical. The former is linked to a concept of horizontal accountability where the executive is accountable to the parliament, whereas the latter is associated with vertical accountability where the executive is accountable to the electorate. This theoretical approach allows us to create a novel typology of political regimes based on the interaction between these two institutions. This typology characterizes four institutional settings that determine the degree to which a ruler is committed to securing rights and or accountable to citizens’ sanctions.

Therefore, we should expect to observe countries with committed and accountable rulers (presence of both constraints); other countries with committed, but not accountable ones (presence of horizontal, absence of vertical), while other rulers would be not committed, but accountable (absence of horizontal, presence of vertical); and, finally, countries with neither committed nor accountable rulers (absence of both constraints). Fixed effects and GMM estimates suggest that the exclusive presence of horizontal constraints is associated with a decrease of about 0.21 percent of GDP per capita. Vertical Constraints seem to have no effect significantly different from zero, but the presence of both institutions is associated with an increase of about 0.18 percent of GDP per capita. In addition, we found empirical evidence that supports the existence of a synergistic interaction between both types of constraints. This means that the combined effect of both institutions is much greater than the sum of their parts.

The analyses also suggest a positive (not conclusive) relationship between horizontal constraints and greater protection of private property. Neither institutional configuration appears to be related to higher physical capital accumulation. However, the presence of both constraints has a positive effect on human capital accumulation, suggesting that the indirect effect of these institutions occurs through this channel compared to others. Finally, no evidence was found linking an institutional configuration with higher levels of governmental stability (as a proxy for state autonomy) and levels of corruption (as a proxy for state predation). We found evidence that political institutions matter for growth. However, the introduction of only one type of constraint is not sufficient to ensure economic success. Contrary to what has been suggested in several studies, the results indicate that the exclusive presence of horizontal constraints is detrimental to growth. This could be explained by the idea that in such types of regimes, most of society is not involved in key political and economic processes.

The remainder of the thesis is organized as follows. Section 2 provides a basic and non-monolithic definition of executive constraints, defines two types of them (horizontal and vertical), and surveys some of the literature that addresses their economic roles. The section concludes by presenting a novel approach developed to analyze their interaction. Section 3 surveys the literature on the economic effects of regime type to identify observable implications of the approach being developed in the article. We then pose some hypotheses to test the validity of our approach. Section 4 describes the empirical strategy to assess our argument. Section 5 analyzes the results and Section 6 concludes and presents the limitations of the study and future research agendas.

## **2. Constraints on rulers: Definition and roles**

One of the most puzzling questions for economics is to explain the economic success and failure of societies. Conventionally, scholars have cited as determinants of development factors such as technological change and innovation; specialization (as a result of the division of labor) and the generation of economies of scale; the accumulation of physical and human capital; the reduction in the information costs of markets; and the increase in productivity through the efficient allocation of resources. The seminal work of North and Thomas contests this approach by suggesting that these factors do not constitute determinants of growth by themselves, but rather “they are growth” (1973, 2).<sup>1</sup>

North’s contributions strengthen the view that places institutions as the fundamental determinant that explains the economic and political divergences across societies. Institutions are defined as the “rules of the game”, or formally, the constraints devised by people that shape human interaction” (North 1990, 3). Institutions are crucial for growth because they reduce the transaction costs of human interaction, which allows for capturing the gains from the voluntary exchange (North and Thomas 1973; North 1990). Within this view, societies may adopt efficient economic organizational forms by establishing institutional arrangements that motivate the undertaking of socially beneficial activities – which happens when the relative individual benefit of undertaking these activities exceeds their cost. As Acemoglu, Johnson, and Robinson pinpoint, some ways in which these arrangements are organized “encourage people to innovate, to take risks, to save for their future, to find better ways of doing things, to learn and educate themselves, to solve collective action problems, and to provide public goods” (2005, 397).

Economic institutions are crucial to running the economy by solving market coordination failures and commitment problems (Greif 2000; 2006), whereas political institutions set the foundations for the former to be sustained by coordinating and processing social conflict, and regulating how

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<sup>1</sup> An essential issue to understanding the argument of North and Thomas (1973) is the difference between “fundamental” and “proximate” determinants of development. For the proponents of this view, the factors listed such as innovation, education, or capital accumulation are considered proximate determinants because although they are important for a society to grow, they do not constitute an explanation for the sources of the differences in prosperity between societies. On the contrary, fundamental determinants such as institutions, culture, or geography explain both the higher concentration of a proximate determinant such as education or capital and the differences in prosperity between countries. For a more detailed explanation see Acemoglu, Gallego, and Robinson (2014).

political power is distributed and exercised. The economic role of political institutions is to ensure fundamental rights by limiting political power (Weingast 1993; 1995). This may solve the fundamental problem in which a government strong enough to protect individual rights is also strong enough to transgress them. If properly functioning, Executive Constraints (from now on EC) are institutions that may be suitable to fulfill this objective. Nevertheless, how can we define them and what functions must they accomplish to effectively impose controls on rulers and have an effect on economic outcomes?

This section proposes a novel approach to understanding and determining the impact of EC on economic growth. First, a basic definition is constructed. Then, we distinguish between two types of EC, we also describe some of the literature that has attempted to study them and identify their fundamental economic roles. Next, we briefly review important contributions to the study of the effects of political regimes (this is due to the very limited literature that deals with the effects of EC separately). From this discussion, we identified how EC can affect growth and the potential channels of influence.

## **2.1. A non-monolithic definition of executive constraints**

From North and Weingast (1989) we know that EC are related to the existence of a parliament endowed with sufficient powers to control the ruler, especially in his ability to raise revenue. In Polity 5 they are defined as political constraints that can be imposed by any “accountability group” (Marshall and Gurr 2020). This second definition extends the term to non-democratic political systems, suggesting that leaders of authoritarian regimes may also be subject to institutional barriers. Thus, the standard definition of EC mainly reflects the degree of checks and balances imposed on the executive branch of government. This approach limits the analytical spectrum of the concept by not incorporating other possible institutions that may also be relevant when conditioning the discretionary use of power and those who wield it. Therefore, in an attempt to enrich the specification of EC, this paper proposes the following definition:

Executive constraints are those institutions – mostly formal – that restrict the discretion of power holders in two fundamental political dimensions: collective decision-making processes, and the use of state coercion.

With this definition, EC cannot be understood within a monolithic concept because its scope incorporates other characteristics that reflect the distribution of power in a society. The first dimension refers to the institutions that regulate political competition (e.g., suffrage as understood as a collective decision leading to the election of authorities), and the decision-making procedures in formal instances of government – which includes the ability to regulate the individual rights of citizens (e.g., property rights, voting rights, economic rights, etc.). The second dimension is the regulation of state capacities regarding the legitimate or non-legitimate monopoly of the use of violence.

Similarly, this proposal can be used for both *de facto* and *de jure* constraints, it includes politicians within the group subject to control (i.e., they do not only control rulers), and most importantly, it incorporates in the EC category other relevant institutions such as elections. In addition, this approach allows us to use the distinction presented in Cox and Weingast (2017) between “horizontal and vertical constraints.” Thus, the former constraints are linked to a concept of horizontal accountability where the executive is accountable to parliament (and/or an independent judiciary), and the latter to vertical accountability where the executive is accountable to its constituents or the electorate. The next subsections define both types of constraints and identify their economic roles.

## **2.2. Horizontal constraints**

EC are institutions that reduce the discretionary nature of power. This concept stems from the need to limit rulers due to the menace that the will of one may overturn the freedom and rights of the many. These institutions are commonly associated with the principle of separation of powers. From the notion of The Federalist, two characteristics may define how they function: (1) The existence of some degree of “constitutional intrusion” from some branches of government to other branches’ attributions;<sup>2</sup> and (2) the presence of a conflict of interests among actors involved in those branches.

Precisely this conflict of interests – which is developed and processed through formal state institutions – is what characterizes Horizontal Executive Constraints (from now on HC). These institutions divide the power of government into relatively autonomous branches. An effective division of power entails several institutional veto players capable enough of influencing political decision-making. These checks can be imposed from legislative control over executive attributions (E.g. public budget), from the presence of an independent judiciary with legal instruments to review executive decisions (E.g. Judicial Review), or from the ability of other state agencies to remove rulers from office (E.g. impeachments, or votes of no confidence). In the opposite case, a single veto point (Tsebelis 2001) reflects the situation of a leader who has unilateral control over political decision-making. This situation commonly reflects the functioning of authoritarian rule.

How do HC influence economic outcomes? By analyzing the Glorious Revolution of 1688, North and Weingast (1989) found that HC over the royal prerogatives of William III of Orange were conducive to capital market development, the increase of the government’s capacity to raise revenues, and the ensuing harnessing of innovations introduced by the Industrial Revolution. Within their study, HC are seen as “commitment devices”<sup>3</sup> that turn credible ruler’s promises to secure the individual rights of relevant social actors. As noted above, rulers are the principal menace to citizens’ rights since they hold power over the confiscatory capacity of the state. The

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<sup>2</sup> Specifically, Madison argues: “(. . .) unless these departments are so far connected and blended, as to give to each a constitutional control over the others, the degree of separation which the maxim requires, as essential to a free government, can never in practice be duly maintained” (The Federalist No 48, 256).

<sup>3</sup> 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 available sets of alternatives, or imposing high costs on some of those alternatives.

existence of HC enables other institutional veto players to bind rulers' decisions to their interests. Hence, the ruler is obliged to respect individual rights (E.g. property rights), something that, in the absence of the commitment, he would not have incentives to do.

More recent studies show that HC tend to increase the level of private investment because they generate certainty about the political environment, and they reinforce the confidence of investors about the security of their assets in the future. Using data on private investment in 74 developing countries, Stasavage (2002, 42) finds that, on average, 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. Stasavage's methodological approach also confirms his hypothesis that there is some sort of variance in private investment levels across countries without checks and balances, which means that there are differences across countries with no HC in their capacity to foster private investment.

Other studies associate political uncertainty resulting from electoral processes with incentives to make irreversible productive investments<sup>4</sup> (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). Their analysis shows that some irreversible investment sectors experience a decline due to the uncertainty produced by the 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 specifically suggest 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. This outcome is reproduced when political power "faces few institutional constraints, government transparency is low, and freedom of speech is curtailed" (Canes-Wrone and Ponce de Leon 2015, 19).

In conclusion, the literature suggests that there is a strong and positive relationship between HC and incentives to invest in different sectors of the economy. Checks and balances tend to increase the level of private investment because they reduce the uncertainty associated with the macroeconomic and political environment. This in turn reinforces investors' confidence in the rules of the game and the security of their private property

### **2.3. Vertical constraints**

EC contribute to economic growth precisely because they fulfill a function: to restrict rulers' behavior. An outstanding scholarly tradition highlights that retrospective voters should control politicians whose performance is perceived as inappropriate. Barro (1973, 19) develops a model in which the electoral process serves as a mechanism to align the interests of politicians with the

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<sup>4</sup> Irreversible investments can be those that have to do, but not exclusively, with durable goods (Bernanke 1983, 104), physical and capital investment (Rodrik 1991, 230-231), real estate (Canes-Wrone and Park 2014, 84), fixed capital investments (Cox and Weingast 2017, 293) such as construction inputs, infrastructure and equipment, and other types of durable goods such as those in the automobile sector (Canes-Wrone and Ponce de Leon 2015, 4).

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. Vertical Executive Constraints (from now on VC) are defined as those institutions that impose electoral controls on politicians. They allow for vertical accountability, in which citizens are capable of evaluating and accordingly sanctioning<sup>5</sup> their rulers' performance, to occur.

VC are institutions that bind power holders with political stakeholders that are not part of formal state bodies. This relationship may better be suited to a principal-agent interaction in which the former (voters) delegate some attributions to the latter (rulers) to represent their interests. Within this approach, elections may solve the problems of adverse selection and moral hazards that emerge from the agency relationship. In Persson, Roland, and Tabellini, these institutions perform at least four distinct functions:

- (1) They aggregate and represent voter's conflictive preferences; (2) they aggregate and disperse information about correct political decisions; (3) they address the problem of adverse selection by allowing citizens to select the most competent individuals for public office; and (4) they provide a mechanism to control moral hazard by holding elected officials accountable to citizens (1996, 2).

How VC may contribute to economic growth? Some of the few studies that address the effects of VC suggest that they can indeed influence some economic factors, especially when they reinforce political accountability. For example, Benhabib and Przeworski (2010) examine the impact of specific types of accountability on economic growth. They distinguish between two restrictions that make politicians accountable:<sup>6</sup> electoral and criminal controls. The former occurs when governments are politically accountable as they are subject to citizen sanctions, while the latter occurs when governments are criminally accountable to other autonomous agencies. They 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 in turn political incentives for better public policy management (Benhabib and Przeworski 2010, 79). In other words, elections may contribute to growth when they allow citizen sanction over rulers' performance.

The following subsection describes the extent to which HC and VC interaction may inform not only about how their specific economic functions are met but if the sequence in which they emerge in the society produces different economic outcomes. As a result, it is possible to identify the economic functions that EC perform, how they influence growth and the channels through which their potential effects are produced.

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<sup>5</sup> On this point, Manin, Przeworski, and Stokes (1999, 30) argue that the threat of not being re-elected should be enough to induce politicians to act in the best interests of their voters.

<sup>6</sup> Their definition of "accountability" is consistent with that of Maravall in Boix and Stokes (2007, 910) in which "a government is accountable when citizens can hold it responsible for its actions and, consequently, punish or reward it with their vote at election time."

## **2.4. Two functions, four institutional settings**

One of the main objectives of this article is to examine how EC shape economic outcomes. With this in mind, the study can look forward to exploring how and to what extent HC and VC may contribute to economic growth. The literature suggests that HC tend to create a commitment to secure property rights of relevant social actors, which encourages the undertaking of beneficial economic activities such as investment. This is generated by reinforcing actors' certainty that their property will not be expropriated and that the rules of the game will not be changed at rulers' caprice. Meanwhile, when VC strengthen political accountability (i.e. the citizen's ability to sanction the performance of politicians) they tend to promote policy improvements conducive to better economic results. In sum, there are two essential functions through which EC may contribute to economic growth: HC through credible commitments, and VC through electoral accountability.

A puzzling fact is that empirical evidence suggests that there is no regular pattern to the sequence in which these institutions emerge in society. For example, there are institutional settings with the presence of both EC, such as democratic political systems with an effective division of powers and free and fair elections. Other settings may present different combinations of both types of constraints such as systems with exiguous checks and balances, but where regular elections are held, or settings in which the leader is controlled neither by the parliament nor by the citizenry.

The English case illustrates this point. The need to levy taxes by the Stuarts between 1603 and 1651 encouraged conflicts between their supporters and opponents. After they were deposed as a result of the English Civil War, and after their restoration in 1660, between 1686 and 1688, King James II excluded the Whigs from the political process and then tried to do the same with his supporters, the Tories. These actions prompted his final overthrow, and the Crown's offering to William III of Orange in exchange for abiding by The Bill of Rights, which protected the interests of the actors represented in the Parliament. As a result of the Glorious Revolution of 1688, the new constitutional foundation provided various actors with veto power over government decisions, creating the beginnings of a division of powers (North and Weingast 1989, 818).

Although this "constitutional watershed" (Cox 2012) allowed the formation of representative institutions that ceded power to a broader segment of society, political inequalities still prevailed. Barely two percent of the English population could vote in the 18th century (Acemoglu and Robinson 2012, 230). What is more, the franchise in the country was not extended until 1832, then in 1867 and 1884 by incorporating the majority of the adult male population, and finally in 1919 and 1928 when women were finally included (Acemoglu and Robinson 2000, 1182).

The English case shows the fact that the introduction of checks and balances preceded the extension of universal suffrage by many years until finally the country was arranged in a system with the presence of both institutions. This means that if we take into account the extension of the franchise to the majority of the adult male population that took place in 1884, and the last extension between 1919 and 1928, England had between 196 and 240 years of institutional performance reflected by the exclusive presence of HC (taking 1688 as its year of introduction), and between 131 and 87



years of institutional performance characterized by the presence of both HC and VC (taking 2015 as an arbitrary reference year).

Both the theoretical functions of EC and the empirical evidence of different institutional sequencing may be used to characterize various “institutional settings” that are formed by the interaction between HC and VC. These settings reflect the extent to which the ruler would find his discretion restricted, the direction of the accountability generated, the target group to which he must be accountable (be responsible by VC), and the group to which he must secure some individual rights (be committed by HC).

This classification allows the argument that the interaction between HC and VC forms at least four institutional settings built according to all their possible combinations. As described above, these settings determine the extent to which a ruler is committed to protecting rights, and/or is accountable to citizens’ sanctions. Therefore, one would expect to observe countries with committed and accountable rulers (presence of both constraints); other countries with committed, but unaccountable ones (presence of horizontal, absence of vertical), while other rulers would be uncommitted, but accountable (absence of horizontal, presence of vertical); and, finally, countries with neither committed nor accountable rulers (absence of both constraints). Table 1 describes these settings:

**Table 1.** Type of ruler as a function of the presence and/or absence of executive constraints

|   | <b>Presence of horizontal constraints</b> | <b>Absence of horizontal constraints</b>       |
|---|---|--|
| <b>Presence of vertical constraints</b> | <i>Committed and accountable ruler</i>    | <i>Uncommitted but accountable ruler</i>       |
| <b>Absence of vertical constraints</b>  | <i>Committed but unaccountable ruler</i>  | <i>Neither committed nor accountable ruler</i> |

*Source:* The author.

By adopting this approach, two relevant contributions to the literature are made. The first is that it explores the interaction between two institutions often linked and treated together. By separating and examining their specific functions, it is possible to identify that both institutions may influence economic outcomes through different channels and to different degrees. On the other hand, the proposal is somewhat distanced from theoretical and empirical approaches that treat the economic consequences of political institutions according to a specific type of regime. In this regard, it contributes a novel approach to evaluating the impact of institutional variations within these regimes. This is done by evaluating the impact of different institutional settings that may arise in societies in different sequences and different periods.

### **3. Economic effects and observable implications**

This section describes some hypotheses on the effect of executive restraints on economic growth. Although limited to the research, the literature on regime-type outcomes constitutes a relevant contribution in the attempt to disaggregate this effect. With this objective in mind, two main groups of arguments have been constructed with their corresponding observable implications. The first group deals with the direct effect of political institutions in general and democratic institutions in particular. In this sense, the aim is to assess whether executive constraints directly affect growth by controlling other relevant determinants of development. The second group of arguments deals with the indirect effect. Concerning this point, the indirect impact of executive constraints on growth is evaluated through the four channels contemplated in the seminal work of Przeworski and Limongi (1993): property rights protection, accumulation of human and physical capital, the autonomy of the state, and predation by rulers. The discussion presented in both sets of arguments concludes with the hypotheses that will be empirically evaluated in the next chapter.

#### **3.1. The direct effect**

The relationship between democracy and development has been extensively surveyed, though no full consensus has been found about its importance. For example, Barro (1996a, 1996b) examines the determinants of growth across countries using linear regressions that include political, social, and economic factors. Using a panel of 100 countries from 1960 to 1990, Barro (1996b) examines the direct impact of democracy on growth. By including as controls some proximate determinants of development,<sup>7</sup> he finds that the overall effect of democracy on growth is weakly negative (Barro 1996b, 1). In addition, the author argues that there is evidence of a non-linear relationship in which more democracy increases growth at low levels of political freedom, but depresses growth when a moderate level has been reached (Barro 1996b, 23). This means that the relationship between democracy and growth has a bell or hump shape: semi-democratic regimes tend to grow faster than regimes treated as more autocratic and more democratic. In later work, Barro (1997, 1) tersely concludes that “more political rights have no significant impact on growth.”

The study by Przeworski et al. (2000) is another relevant source. With a sample of more than 4000 country-year observations ranging from 1950 to 1990, the authors analyze the impact of democracy on material welfare. They conclude that “total output grows at the same rate under the two regimes in both poor and richer countries” (Przeworski et al. 2000, 179). However, their research does find some evidence that democracies are associated with slightly higher per capita GDP growth than dictatorships. The descriptive analysis also identifies that there is much greater variation in economic performance between different dictatorships than between different democracies. This suggests that there may be considerable institutional variation between dictatorships and that this factor may play a role in explaining their greater variation in growth levels.

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<sup>7</sup> These factors are the maintenance of the rule of law and free markets, low government consumption, human capital accumulation and the initial level of GDP (Barro 1996b).

Gerring et al. (2005) reach similar conclusions regarding the net effect of democracy on economic performance. The authors analyze democracy as a variable that accumulates over time, creating a stock of capital (i.e. physical, human, social, and political) that tends to affect growth. They conclude that democracy does not have a statistically significant effect on economic growth (Gerring et al. 2005, 349). These results are supported using different indicators of democracy and specifications of their model.

In contrast, the influential work of Papaioannou and Siourounis (2008) examines the evolution of growth before and after incidents of permanent democratic transitions in a sample of 174 countries over the period 1960-2003. Their study is one of the main contributions that focus on estimating the dynamic evolution of annual growth during a political transformation. Specifically, the authors use static and dynamic panel data techniques that control for general trends and time-invariant and country-specific characteristics that are not observed by their baseline model. As a result, their study shows that a permanent democratic transition is associated with an increase of about 1% in annual real GDP per capita growth<sup>8</sup> (Papaioannou and Siourounis 2008, 1520). The descriptive analysis also reveals some interesting facts. In some cases, transitions to democracy tend to occur during recessions that possibly coincide with the downturn of the business cycle. After the transition, there seems to be an immediate increase in economic performance, which fluctuates in subsequent years. However, after the consolidation of democracy (which according to the authors happens after the fifth, sixth, and seventh post-transition year) growth stabilizes at a higher rate than in the pre-transition period<sup>9</sup> (Papaioannou and Siourounis 2008, 1542).

The case for democracy is supported by the study of Acemoglu et al. (2019). The authors use dynamic panel models controlling for fixed effects and growth dynamics to estimate the effect of democracy on GDP per capita. Their results suggest that a country transitioning from autocracy to democracy achieves 20 percent more GDP per capita over the next 25 years than a country that remains nondemocratic (Acemoglu et al. 2019, 48). Their fixed effects and GMM estimates do not vary significantly with the implementation of different econometric strategies and specifications, including a semiparametric treatment effects model and an IV approach.<sup>10</sup> Finally, the authors also investigate the channels through which democracy increases GDP. They conclude that democracy contributes to growth by increasing investment, encouraging economic reforms, improving the provision of education and public health, and reducing social unrest (Acemoglu et al. 2019, 51).

As Papaioannou and Siourounis (2008) and Acemoglu et al. (2019), we argue that EC have a positive effect on economic growth. This assertion holds because two institutional settings (the one

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<sup>8</sup> Their estimates imply that in a country that abandons autocracy and consolidates representative institutions, annual growth accelerates after transition approximately 0.7% to 1.1% faster relative to the absence of regime change (Papaioannou and Siourounis 2008, 1533).

<sup>9</sup> The authors also find evidence consistent with Barro's (1996b, 1997) finding that growth accelerates when a country moves from total autocracy to intermediate levels of political freedom.

<sup>10</sup> The authors use regional waves in transitions to and from democracy as an instrument for country-level democracy. In this specification, their analysis finds that a democratization increases GDP per capita by about 25 percent in the first 25 years (Acemoglu et al. 2019, 51).

portraying the presence and absence of both EC) reliably recreate the basic types of political regimes used by previous research (i.e. democracy and dictatorship). A country with committed and accountable rulers would grow at higher levels than the rest of the countries with different types of institutional settings. However, the difference between countries with committed but unaccountable rulers and those with uncommitted but accountable ones is not clear. For this reason, a conservative hypothesis for this relationship is maintained by arguing that countries that fit into these intermediate categories grow at similar levels, but experience better economic performance than countries without any constraints. Formally, these first two hypotheses are expressed in the following terms:

*H<sub>1</sub>. Developmentalist hypothesis:* Countries with committed and accountable rulers (presence of both EC) grow at higher levels in terms of GDP per capita than countries with the other types of rulers.

*H<sub>2</sub>. Conservative hypothesis:* Countries with the exclusive presence of HC or exclusive presence of VC grow at similar levels, but at higher rates than countries with the absence of both constraints.

The typology developed in this research also allows us to evaluate the non-linear relationship found by Barro (1996b) in which countries with intermediate levels of political freedom grow at higher levels than more autocratic and more democratic countries. In this sense, countries that fit into the intermediate categories of the typology should experience higher levels of growth compared to countries with both EC and those with no EC. This hypothesis is presented as follows:

*H<sub>3</sub>. Barro's non-linear relationship:* Countries with the exclusive presence of HC or exclusive presence of VC grow at higher levels than countries with the presence and absence of both.

The next subsection examines the channels through which EC affect economic growth. For this purpose, another important part of the literature focused on the democracy-development relationship is analyzed. Since the concept and types of EC presented in this study constitute basic components of democracy (especially in their liberal contestation, and electoral-procedural dimensions), the objective is to disaggregate their combined effect and to generate some observable implications on the impact of these particular types of political institutions.

### **3.2. The indirect effect**

Previous research has analyzed the direct effect of regime type on growth, keeping as controls other proximate determinants. Tavares and Wacziarg contrast this approach by suggesting that “if an institution as extensive as democracy is important, it should be important indirectly through its effect on variables that in turn determine economic growth” (2001, 1342-1343). Their estimates provide statistically significant evidence that higher levels of democracy lead to “higher levels of education, higher government consumption, lower rates of investment, a lower degree of openness to trade, and lower income inequality” (Tavares and Wacziarg 2001, 1357). The authors show that

democracy does not have a direct impact on growth, but rather through specific channels. In particular, democracy promotes growth through human capital accumulation and, less robustly, by reducing income inequality. Conversely, democracy hinders growth by reducing the rate of physical capital accumulation and, less robustly, by increasing the ratio of government consumption to GDP (Tavares and Wacziarg 2001, 1341).

The comprehensive meta-analysis conducted by Doucouliagos and Ulubasoglu (2008) performs a quantitative assessment of the literature on democracy and growth. With a population of 483 estimates derived from 84 studies, the authors find that 15% of these estimates are negative and statistically significant, 21% are negative and statistically non-significant, 37% are positive and statistically non-significant, and 27% are positive and statistically significant (Doucouliagos and Ulubasoglu 2008, 62). Their results also seem to confirm the argument in favor of the indirect effect of democracy (indeed, the authors conclude that democracy does not have a direct impact on growth). However, their study does find that democracy has a robust, positive, and significant effect through an increase in human capital and economic freedom, and a reduction in political instability and inflation (Doucouliagos and Ulubasoglu 2008, 75).

Knutsen (2012) critically examines the arguments, empirical evidence, and methodological issues in the literature dealing with how democracy affects growth. His main contribution focuses on evaluating five arguments about this relationship. The first four arguments are drawn from the seminal work of Przeworski and Limongi (1993) which examines the impact of regime type on four factors that in turn can influence economic growth: property rights, investment, state autonomy, and predation by rulers. The fifth argument includes technological change as another potential factor. The first four channels are discussed below. Although these factors were designed to evaluate the indirect effect of democracy, the approach presented in this study allows us to incorporate them into the analysis of the impact of institutional variations. This leads to an exploratory evaluation of the indirect effect of EC – and the institutional settings that their interaction generate – on growth. In particular, the aim is to assess the comparative performance of the different institutional settings that emerge from the typology constructed in this research. The discussion will revolve around whether or not a given setting increases growth through the channels presented below.

### **3.2.1. Property rights protection**

Property rights are “the rights that individuals appropriate over their labor and the goods and services they own” (North 1990, 33). This appropriation is a function of forms of organization, the specifications of legal rules, and patterns of behavior and enforcement, that is, the institutional framework within which a society is organized (North 1990). Its connection to the conditions for prosperity lies in the assumption that its establishment and generalized assurance tend to create incentives to undertake socially beneficial activities. Thus, the argument in favor of property rights

illustrates the point that an individual would be willing to engage in productive activities if he had the security of being able to enjoy their benefits once obtained in the future.<sup>11</sup>

Przeworski and Limongi (1993) question the use of democracy as a guarantee for private property. In particular, they take up the classic debate on whether the extension of voting rights and freedom of association (in particular the freedom to form unions) can threaten such rights.<sup>12</sup> Their argument centers on the fact that democracy generates pressures for the equitable distribution of property, which weakens its protection. They conclude that “while everyone seems to agree that protection of private property promotes growth, it is controversial whether democracy or dictatorship better secures these rights” (Przeworski and Limongi 1993, 51). Knutsen (2012) reviews this assertion. Drawing on the works of Olson (1993), North (1990), and North and Weingast (1989), the author argues that democracy is associated with some institutional features that restrict state-directed expropriation. He asserts that although democracies have pursued many redistributive policies, they have also adopted more production-oriented policies that do not focus on forms of expropriation and redistribution of property from the rich to the poor (Knutsen 2012, 399).

From North and Weingast (1989) and Weingast (1993, 1995) we can infer that HC tend to protect property rights. This is because these institutions function as a commitment mechanism that restricts the will of the rulers to transgress these rights. However, from the same studies, it is interpreted that only a small number of citizens could enjoy the benefits of this restriction. In fact, from the English experience, it is observed that the citizens who were able to take advantage of their property rights as a result of the Glorious Revolution of 1688 were those who previously enjoyed political rights and even some economic privileges (i.e. being part of the English parliament, or having concessions of commercial monopolies).

At the moment there is no systematic evidence linking VC as identified in this research with greater or lesser protection of private property. In theory, VC are associated with a universal extension of rights such as voting, the institutionalization of which tends to generate better political accountability. This should contribute to more people in society being able to enjoy their rights, including their property rights. However, the electoral component is not enough to commit rulers to refrain from transgressing the individual rights of the citizenry or even to gain popular support for policy initiatives that do so. Leaders with sufficient power may be unaccountable to the citizenry and use elections as a mere façade for political competition.<sup>13</sup>

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<sup>11</sup> This idea goes 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).

<sup>12</sup> Referring to Marx’s thoughts, Przeworski and Limongi (1993, 52) explain that democracy triggers “class struggle.” Specifically, they argue that the poor would use democracy to expropriate the rich. Then, the rich when threatened will attempt to subvert democracy “typically by abdicating political power” to the military.

<sup>13</sup> Classical liberalism feared that the will of the many (highlighted in classical ideas of democracy) would prevail over the freedom of the individual. The idea of the “tyranny of the majority” justifies the assertion that at least in empirical terms, VC appear to have no comparative advantage over HC in securing property rights.

As a consequence, institutional settings containing the presence of HC should contribute more to growth through property rights protection than institutional configurations with the exclusive presence of VC or the absence of both. More formally, from the empirical evidence, it should be possible to observe the following:

*H<sub>4</sub>*. Countries with the presence of HC grow more through property rights protection than countries with the exclusive presence of VC and the absence of both.

### **3.2.2. Investment: Physical and human capital accumulation**

Just as the classical argument treated democracy as a threat to property rights, a very similar idea began to develop in the second half of the twentieth century concerning investment. In this view, democracy generates demands for immediate public consumption. These demands threaten the profits of capital holders, which reduces investment and retards growth (Przeworski and Limongi 1993, 54). A relevant implication of the argument is that dictatorships are better able to force savings and set a development model in motion. Because there is little or almost no electoral accountability in dictatorships, an authoritarian government has fewer pressures to allocate public resources toward immediate consumption.<sup>14</sup> As a result, dictators can make long-term investments independent of the desires of a “short-sighted” electorate (Przeworski and Limongi 1993).

Empirical research such as that of Tavares and Wacziarg (2001) provides statistical evidence that dictatorships increase growth through the investment channel. They show that democracy implies costs to growth by reducing rates of investment in physical capital and increasing government consumption. In particular, their estimates suggest a change from 0 to 1 in their democracy index is associated with a 1.099 reduction in the annual growth rate of GDP per capita through the investment channel alone (Tavares and Wacziarg 2001, 1358).

Dictatorships may have an advantage when it comes to boosting investment in physical capital due to the lack of constraints and popular pressures. Indeed, the dictator would make decisions that are costly for the present but oriented toward a better future, instead of yielding to the preferences of the people who would think much more about the immediacy of their needs. However, according to Przeworski and Limongi (1993), it is still intriguing why a dictator would behave benevolently and “future-oriented.” Moreover, from rational choice theory, one would expect the dictator to lack incentives to make productive investments in the absence of the certainty that he will still be ruling after a few years. Conversely, if popular discontent constitutes a potential threat to the stability of the dictatorship, a dictator is unlikely to starve his population to death to achieve long-term development.

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<sup>14</sup> Rao (1984, 74-75) describes this relationship in the following terms: “Economic development is a process for which huge investments in personnel and material are required. Such investment programs imply cuts in current consumption that would be painful at the low levels of living that exist in almost all developing societies. Governments must resort to strong measures, and they must enforce them with an iron hand to marshal the surpluses needed for investment. If such measures were put to a popular vote, they would surely be defeated. No political party can hope to win a democratic election on a platform of current sacrifices for a “bright future.”

In contrast, the studies already reviewed by Stasavage (2002), Canes-Wrone and Park (2014), and Canes-Wrone and Ponce de León (2015) provide arguments and empirical evidence that the presence of HC encourages private investment. In their view, HC can increase the return on investment by reducing the degree of uncertainty in the political, social, and economic environment. Indeed, from the perspective of private economic agents, investment is an activity sensitive to the protection of property rights (Knack and Keefer 1995). Thus, a system that protects such rights and ensures a more predictable business environment can encourage capital accumulation. Even though a dictator may think about long-term development, growth depends on the actions of private agents, who will prefer a less uncertain environment to make risky decisions, generate profits and encourage investment.

Physical capital accumulation is not the only factor prone to change in political institutions. As Knutsen (2012, 400) suggests, if the concept of capital is extended to include human capital as well, democracy may have an advantage compared to dictatorship. The importance of human capital for growth is a widely accepted fact by economic researchers (Barro and Sala-i-Martin 2004; Acemoglu, Gallego, and Robinson 2014). In this sense, Knutsen (2012) argues that one should expect greater levels of education and health care in democracies than in dictatorships. This is due to the assumption that democratic regimes are more responsive to citizens' preferences than dictatorial ones. Tavares and Wacziarg (2001), and Doucouliagos and Ulubasoglu (2008) associate democracy with a positive spillover effect on growth through human capital accumulation.

The evidence seems to suggest that dictatorships can increase investment in physical capital - despite the wide variation in outcomes between different dictatorial regimes and the mixed evidence in this regard. This view is supported by the performance of a dictator who makes costly policy decisions to ensure a more prosperous future. On the part of private agents, it seems that the presence of a strong parliament that limits the actions of the executive – making the political environment predictable – is sufficient to take risks and invest. This is because the presence of HC reinforces investors' certainty that the rules of the game will not change at the ruler's will. With less uncertainty, private agents' certainty of being able to dispose of their profits increases, increasing incentives to invest and, therefore, growth. Thus, one would expect to observe that countries with the absence of both EC and the exclusive presence of HC would grow more through investment in physical capital than countries with the presence of both EC and the exclusive presence of VC. This hypothesis is expressed as follows:

*H<sub>5</sub>. Countries with the absence of both EC and exclusive presence of HC grow more through physical capital accumulation than countries with the presence of both EC and exclusive presence of VC.*

Finally, if the concept of capital is extended further, democracies are more likely to promote human capital accumulation than dictatorships. Indeed, both horizontally and vertically constrained rulers should be more responsive to the needs of the general population, distributing greater resources to public education and health care. On the other hand, only horizontally constrained rulers and rulers not constrained by either institution would have no incentive to invest in human capital. This is due



to the disconnection with the preferences of the public and the lack of electoral accountability. This observation is evaluated in the following hypothesis:

*H<sub>6</sub>*. Countries with the absence of both HC and exclusive presence of HC grow less through human capital accumulation than countries with the presence of both EC and exclusive presence of VC.

### **3.2.3. Autonomy of the State**

Research focused on the Asian Tigers has attributed their economic success to the autonomy of their states. State autonomy is defined in Przeworski and Limongi (1993, 56) as “the combination of the state’s ability to carry out development policies with its insulation from particularistic pressures, specifically those originating from large firms or unions.” The argument, the authors continue, is expressed in two steps: first, state autonomy favors growth, but it is possible only under authoritarianism (1993, 56).

The idea that state autonomy can be conducive to development is supported by the collective action literature. Individuals often behave sub-optimally as economic agents, due to the inability to align their preferences with those of the group (i.e. the principle of transitivity is not fulfilled). They tend to organize themselves into interest groups that pressure the government for transfers in their favor (Przeworski and Limongi 1993, 56). Being much more pluralistic, democracies are more prone to be captured by these groups (Olson 1982 cited in Knutsen 2012, 401). As a consequence, the implemented public policy could turn out to be inconsistent with the interests of the general population, or even growth could be sacrificed for the protection of specific groups and business sectors (Knutsen 2012, 401). Accordingly, when trying to implement economic measures in a democracy, the losers of such reforms could constitute themselves as important “veto players” (Tsebelis 2002), who would tend to block them. In contrast, under an authoritarian regime, the dictator has sufficient means to carry out such reforms, which can also be carried out more quickly since dictatorships omit several institutional procedures and processes that exist in democracies.

As described by Przeworski and Limongi (1993), some authors argue that authoritarian regimes are better suited to establish the required autonomy that the state needs to foster development. The following reflection by Haggard (1990, 262) depicts this point: “Because authoritarian political arrangements (referring to authoritarian regime type or institutional arrangement) give political elites autonomy from distributional pressures, they enhance the government’s ability to extract resources, provide public goods, and impose the short-run costs associated with efficient economic adjustment.” If compared to the argument described in the previous section (especially the one focused on physical capital accumulation), it is the elites who take the role of foresight and support the necessary measures to ensure growth in the future. These ideas have attracted much attention from scholars who have tried to analyze the economic success of cases such as Singapore and South Korea during the second half of the 20th century.

Despite its acceptance, it is still questionable how state autonomy should foster more efficient political decision-making. As Knutsen (2012) highlights, policy decisions must be embedded in popular support from broad sectors of society. Without local support, political decisions would be disconnected from the needs of the citizenry, which would imply inefficient decision-making or even the prelude to greater popular unrest. On the other hand, the fact that a dictator is isolated from popular pressures does not imply a greater investment in state capacities. Indeed, cases in Africa report several dictatorships that fail to maintain order in their territory due to the weakness and limited centralization of their states. In the opposite case, a very powerful and uncontrolled state can threaten the rights of the citizenry, which would be counterproductive for long-term economic growth.

Finally, from Bueno de Mesquita et al. (2003) and Bueno de Mesquita and Smith (2011) it is understood that although rulers are isolated in authoritarian regimes, the dictator survives because of specific groups, being a political party, an elite, or the armed forces. Each political leader owes his permanence in power to a group, his “winning coalition” (Bueno de Mesquita et al. 2003, 07). This group controls the essential characteristics of political power in a system. In democracies, the winning coalition is the group of voters who elect the leader; in other types of systems, it is the set of people who control the sufficient instruments of power to keep the leader in office (Bueno de Mesquita et al. 2003, 07-08). Due to the wide institutional variation that exists in dictatorships, it is questionable whether a dictator can be autonomous simply because he is a dictator. Moreover, as Knutsen (2012, 401) concludes, the differences between the economic performance of different types of political regimes do not lie in the degree of autonomy of their states, but in the size and characteristics of their winning coalition.

The extent to which state autonomy promotes growth may interact with the way institutions are arranged in a society. For example, if we take as valid the argument that authoritarian institutional arrangements are better suited to insulate rulers from particularistic pressures, countries with both EC should not grow as expected through state autonomy. Indeed, reforms seeking efficient economic adjustments would be more difficult to carry out in these types of settings than in others. This is due to different pressures from the electorate with the means to influence political decision-making and institutional procedures that would make such reforms much slower. Haggard’s (1990) argument implies that elites can invest in state capacities and public goods as long as the ruler is not tied to the popular will. Countries with the absence of HC but still have their rulers elected through periodic elections may not be sufficiently autonomous to foster growth as described by the theory. These leaders may have a much wider scope for action because neither the judiciary nor the legislature has the ability to constrain them. But by maintaining an electoral process that allows the people to have some say over their future, elites may not give their full support to pursuing developmental policies.

In contrast, countries with the absence of both EC should be able to count on more autonomous – and consequently more powerful – states due to the lack of restrictions on rulers’ actions. The same would be true for countries with the exclusive presence of HC. The latter institutional arrangement

constitutes a system that protects the interests of a group of citizens over the majority of the population, who are excluded from political processes. As a consequence, countries with both types of settings should grow more through reforms and economic adjustments that can be taken by those who hold state power. In summary, our hypothesis stands as follows:

*H<sub>7</sub>. Countries with the presence of both EC and exclusive presence of VC grow less through state autonomy than countries with the absence of both and exclusive presence of HC.*

#### **3.2.4. Checks on predatory rulers**

State autonomy argument describes a situation in which a dictator has the capacity – and the will – to carry out developmental reforms due to a lack of popular pressure. This view presents the political leader as a visionary who sacrifices the present for a more prosperous future. However, why would a self-interested dictator not use his almost unlimited power to promote policies for his benefit? The answer to this question is simple, most dictators use their power to carry out their personal goals, creating disastrous economic consequences for the rest of society.

North (1990) describes the pernicious consequences of a powerful state, emphasizing that it will always be ready to plunder societal resources. In this view, dictatorships inevitably constitute a drag on development. This perspective seems to rest on the assumption that a productive role for the state is optimal for maximizing efficiency, growth, and welfare (Przeworski and Limongi 1993, 58). Indeed, Przeworski and Limongi explain that the models built by several authors assume that governments engage in activities that assist private production in two ways, either by maintaining a framework for a private activity or by supplying inputs directly into the economy<sup>15</sup> (Przeworski and Limongi 1993, 57-58).

As Knutsen (2012, 402) describes, one might expect that unchecked rulers would tend to confiscate or expropriate socially productive resources for their material benefit. In response, individuals would not only take the security of their private property as uncertain but would be unwilling to take risks to engage in other types of economic activities such as investment. Rulers may also have incentives not to encourage development if they consider it detrimental to their survival. If an authoritarian ruler believes in the theory of modernization, in which growth and industrialization pave the way for an extension of political rights and democracy, he is likely to block attempts to industrialize and modernize the economy (Acemoglu and Robinson 2006), and shift resources toward maintaining a repressive apparatus rather than strengthening the productive sector.

On the contrary, in democracies, the presence of elections, a strong parliament, an independent judiciary, or free media can impose restrictions and reduce the incentives for this behavior. A relevant assumption derived from North and Weingast (1989), and Weingast (1993; 1995) is that a state must be controlled to generate development conditions. The economic role of EC is precisely

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<sup>15</sup> To describe the role of the state in the economy, Przeworski and Limongi (1993, 58) explain: “Governments provide law and order, enforce contracts, and defend private parties from external threats, as well as providing those inputs to private production that are not efficiently supplied by the market.”

to control potential abuses of state authority. Influential research such as those mentioned above focuses on the role of the HC as a commitment mechanism to ensure that the ruler refrains from using state power to infringe on the property of individuals (North and Weingast 1989). As a consequence, we should observe that countries with the presence of these institutions experience better economic performance compared to countries with their absence.

In turn, Benhabib and Przeworski (2010) show the importance of the VC in controlling the behavior of rulers. Periodic elections can generate and even reinforce vertical accountability that conditions the behavior of politicians. At least theoretically, this would occur because the survival of the ruler is linked to his performance in office. If a voter interprets such performance as good, he will reward it with his support; if he considers it bad, he will punish the leader by supporting another contender. One of the most recurrent criticisms of the effectiveness of elections as a control mechanism is that authoritarian rulers may use them as a mere façade for popular support. Even these dictatorships may refrain from engaging in predatory behavior though. One reason is that authoritarian regimes differ greatly in how they are arranged institutionally. Some dictatorships may, for example, vary in terms of institutionalized checks and balances: they may have legislatures and parties that play some political role, including in controlling the ruler's predatory behavior.

Indeed, Knutsen (2012, 402) argues that a leader's willingness to engage in predatory behavior depends on how his or her probability of survival is affected as a product of such predation. Bueno de Mesquita et al. (2003) argue that dictators with relatively large winning coalitions may have incentives to provide public goods rather than engage in predatory behavior. Besley and Kudamatsu (2008) go even further by considering that winning coalitions that are effectively likely to retain their positions if a given dictator loses power may discipline him to refrain from predatory behavior. If the extension of suffrage rights is seen as the product of pressures from a broadening winning coalition, it can be argued that VC can indeed constrain the behavior of rulers, and at least impose some control on authoritarian rulers. In sum, we pose the following hypothesis:

*H<sub>8</sub>. Countries with the combined or exclusive presence of HC and/or VC grow more by restricting the predatory behavior of rulers than countries with the absence of both.*

Both the hypotheses on the direct and indirect effects of EC are summarized in Table 2.

**Table 2.** The hypothesis of the effects of executive restraint on economic growth

| Effects  | Hypothesis     | Description  |
|----------|----------------|--|
| Direct   | H <sub>1</sub> | <u>Developmentalist</u> : The presence of both executive constraints increases growth.   |
|          | H <sub>2</sub> | <u>Conservative</u> : Countries with the exclusive presence of only one constraint grow at similar rates.  |
|          | H <sub>3</sub> | <u>Barros's non-linear relationship</u> : The exclusive presence of only one constraint increases growth more than the presence and absence of both. |
| Indirect | H <sub>4</sub> | <u>Property rights</u> : In favor of horizontal constraints.   |
|          | H <sub>5</sub> | <u>Physical capital</u> : In favor of horizontal constraints and absence of both.  |
|          | H <sub>6</sub> | Human: In favor of vertical constraints.   |
|          | H <sub>7</sub> | <u>State autonomy</u> : In favor of horizontal constraints and absence of both.  |
|          | H <sub>8</sub> | <u>Predatory state</u> : In favor of both executive constraints.   |

*Source:* The author.

#### 4. Data and Methods

To empirically assess the hypothesis, we examine the political institutions of an unbalanced panel of 143 countries between 1950 and 2010 (Appendix 1 provides a complete list of these countries). However, several analyses are conducted using subsamples that vary in terms of the number of countries and the number of years available. The overall sample covers a total of 7603 country-year observations, but this number changes depending on the availability of information. The entry year for each country is 1950 but varies according to its year of independence or the first year in which its growth data were available. The exit year corresponds to 2010 for all countries. The extension of the sample allows us to observe changes in the HC and VC for different numbers of countries.

##### 4.1. Dependent variable: Log GDP per capita

Although controversial, the standard definition of economic growth refers to a sustained increase in *per capita* income over a sufficient period (North and Thomas 1973, 1; Sen 2013, 72). This definition provides a useful framework for examining observable indicators of material well-being among societies. Dasgupta (1993, 76) suggests that besides the extension of civil and political liberties that a person may enjoy, three dimensions allow the construction of a measure of individual well-being: income, health, and education. The author argues that a person's real income measures the extent to which consumer goods are obtained in the marketplace. In contrast, given the nature of the good,<sup>16</sup> the last two dimensions do not fall into this category since they require

<sup>16</sup> Health and public education are neither excludable goods nor consumption rivals. Therefore, they fit the standard definition of *public goods*. For instance, markets cannot provide them precisely because of the inability to obtain private profits from their provisioning, and the impossibility of adjusting their prices according to the laws of supply and demand.

certain levels of state intervention due to the inability of markets to provide an ideal resource allocation mechanism to supply them.<sup>17</sup> Consequently, income determines the set of consumption decisions that a person enjoys in his or her life (Przeworski et al. 2000, 5-6) and, therefore, constitutes a good indicator of the material well-being existing in a society.

Given the extension of the sample, it would not be possible to use conventional measures of *per capita* income levels. As an alternative, we use the natural logarithm of gross domestic product (GDP) per capita measured in 1990 U.S. dollar international prices (dollar Geary-Khamis). The variable is available for the unbalanced panel of 143 countries between 1950 and 2010 which constitutes the main sample of the research. Its information was obtained from the Maddison Project Database version 2013 (Bolt and van Zanden 2014), whose statistics correspond to a historical and exhaustive study of the world's economic growth over centuries.

## 4.2. Horizontal Executive Constraints

HC refer to the extent to which rulers are subject to constitutional constraints operating at the same level of political influence. Such limitations can be exercised through legislative control over some executive attributions (E.g. public budget), or through the ability of other state bodies to remove rulers from office (E.g. impeachments, censure motions, or votes of no confidence).

As Cox and Weingast (2017), we quantify HC using the concept of Polity IV (variable *xconst*) which describes the degree of checks and balances between the various parts of the government on a 7-point scale. Marshall and Gurr describe that this variable refers to “the extent of institutional constraints<sup>18</sup> on the decision-making powers of the chief executive, whether an individual or a collective executive” (2020, 61). They explain that their notion of EC uses the notion of “horizontal accountability” described in democratic literature, except that it is assumed that dictatorships may also be subject to certain institutional controls.

To capture the presence of HC, a dummy variable was generated (variable *HConst* in the dataset) from the concept of Polity IV which is equal to 1 when country *i* in time *t* has “substantial limitations” (*xconst* = 5), 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 HC 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). The dataset has both the ordinal 7-point scale HC variable from Polity IV, and the dichotomous variable generated from the latter.

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<sup>17</sup> Dasgupta pinpoints an interesting idea. Whether or not a country enjoys high-quality public goods depends on the state's capacity to provide them. This provision may vary enormously among countries, so it is possible to observe societies with comparatively high-income levels, but with worse health and public education systems; whereas other societies may have good standards of both public goods, but restricted access to other material goods (1993, 77).

<sup>18</sup> “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).

### 4.3. Vertical Executive Constraints

VC are institutions that impose electoral controls on rulers. They can be characterized, for example, by the degree to which the right to vote has been extended in society, or by the presence of periodic, free, and fair elections. For many authors, the latter characteristic is often considered sufficient to denote a minimum definition of democracy. Consequently, it has been a common practice to associate VC with the concept of “electoral democracy” (Cox and Weingast 2017).

One way to measure the concept of VC is by using the dichotomous coding of Boix, Miller, and Rosato (2012). Accordingly, a country classified as an electoral democracy in its denomination is treated as a country that has VC.<sup>19</sup> The information for this variable (variable *Democracy* in the dataset) is available for all countries and years of the sample. Due to the use of Robert Dahl’s conditions on contestation and participation to characterize the concept of polyarchy, Boix, Miller and Rosato’s coding is connected with other important classifications in the literature, such as that developed by Przeworski et al. (2000), and that of Cheibub, Gandhi, and Vreeland (2010).

A second way to measure this variable 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 VC when at least one of the chief executives<sup>20</sup> 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). In contrast, there is an absence of VC 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). Both its ordinal scale and the generated dummy (*VConst* variable in the dataset) are available for all countries and years of the sample. The dataset has both measures of VC.

### 4.4. Institutional settings

To evaluate the expected effects of each institutional setting described in Table 1, four *dummy* variables were generated from Polity IV’s concept of “constraints on the executive” for the case of HC, and the coding of Boix, Miller, and Rosato (2012) and Polity IV’s concept of “electoral competitiveness” for the case of VC. This choice is justified because these measures are available in almost the same extension of years and countries in the research sample.

The first setting (LH LV) is generated in the dataset with the name “*IS<sub>i</sub>*”. This variable takes the value of 1 when the variables *HConst* and *VConst* obtain the value of 1 in country *i* and time *t*. The variable is equal to 0 in all the remaining cases. The second setting (LV ~LH) is named “*IS<sub>ii</sub>*”.

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<sup>19</sup> Boix, Miller, and Rosato define a country as democratic when it satisfies the following conditions for the dimensions of contestation and participation in Robert Dahl’s theory of polyarchy: “Contestation: 1. The executive is directly or indirectly elected in popular elections, and is accountable directly to the voters or to a legislature. 2. The legislature (or the executive if directly elected) is elected in free and fair elections. Participation: 1. A majority of adult males have the right to vote” (2012, 1530-31).

<sup>20</sup> This refers to dual regimes in which one head of the executive is elected by hereditary succession. This term is mostly associated with parliamentary monarchies.

This variable is equal to 1 when the variable *VConst* obtains the value of 1 and *HConst* the value of 0; and it is equal to 0 in all other cases. The third setting (LH ~LV) is called “*IS\_iii*”. This variable is equal to 1 when the variable *HConst* is equal to 1 and *VConst* is equal to 0; and it gets the value of 0 in all the remaining cases. Finally, the fourth setting (~LH ~LV) is called “*IS\_iv*”. This variable is equal to 1 when the variables *HConst* and *VConst* obtain the value of 0; and it is equal to 0 in all the remaining cases. This latter constitutes the reference category.

#### 4.5. Influence channels

Based on Przeworski and Limongi (1993), these factors include property rights protection, physical and human capital accumulation, state autonomy, and checks on rulers’ predation. To capture the first channel, the political risk component called the “Investment Profile” of the International Country Risk Guide (ICRG) is used.<sup>21</sup> This component evaluates the factors that affect the risk of investing in a country and is constructed by the sum of three subcomponents: contractual feasibility expropriation; repatriation of profits; and payment delays. The variable ranges between a maximum score of 12 points (the sum of the maximum scores of each subcomponent) and a minimum of 0, where 12 is equivalent to very low risk and 0 to very high risk (ICRG Methodology n.d., 3-4). Hence, it would be understood that a country rated with a low score would not have the ideal conditions to protect private property, while a country rated with a high score would reflect the opposite case. Its information is available for 146 countries in the world between 1984 and 2017.

To capture the degree of physical capital accumulation in a country, gross capital formation as a percentage of GDP available in the World Bank’s Development Indicators is used. This variable is composed of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories.<sup>22</sup> Its information is available for the 143 countries in the base sample of the research for the period 1960-2010. On the other hand, the degree of human capital accumulation is measured from the human capital index obtained from the Penn World Table version 10.0 (PWT 10.0) constructed by Feenstra, Inklaar, and Timmer (2015). This measure is based on the average years of schooling of the population, and the expected rate of return to education (Feenstra, Inklaar, and Timmer 2015). This variable is available for the period 1950-2019.

The following channel describes state autonomy as the degree to which rulers are pressured by particular interests coming from relevant social groups, which moderates their ability to adopt reforms to ensure economic development. Despite the restrictions in terms of measurement instruments to capture this concept, the research has opted to use the “Government Stability” component of the ICRG. This variable evaluates both the government’s ability to carry out its stated

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<sup>21</sup> The risk classification developed by the PRS Group covers 22 variables in three risk subcategories: political, financial, and economic. Each subcategory is represented by an index, the political risk index is based on 100 points, the financial risk index is based on 50, and the economic risk index is based on 50 (ICRG Methodology 2021, 1).

<sup>22</sup> Fixed assets include land improvements; plant, machinery, and equipment purchases; and construction of roads and railroads, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are the stock of goods held by firms to meet temporary or unexpected fluctuations in production or sales (World Bank n.d.).



programs and its ability to stay in office (ICRG Methodology n.d., 3). Its indicator is made up of the sum of three subcomponents: unity in government, legislative strength, and popular support (each with a maximum score of 4 points); and its total values range from 0 to 12, where 12 equals very low risk, and 0 equals very high risk. Therefore, a country rated with higher scores would imply the existence of a more autonomous state with the capacity to effectively carry out political decisions, while low scores would correspond to the opposite case. The information for this variable is available for 146 countries from 1984 to 2017.

The last channel describes the degree to which a ruler can predate socially productive assets for personal gain. Again due to measurement constraints, the research has chosen to capture this concept from the “Corruption” component of the ICRG. This decision is justified by the fact that this variable captures above all the forms of public corruption that can be associated with the predatory capacity of rulers in general, and politicians in particular. Specifically, this component encompasses actual or potential manifestations of corruption in the form of “excessive patronage, nepotism, job booking, favor buying, secret party financing, and suspiciously close links between politics and business” (ICRG Methodology n.d., 4-5). The variable is computed on a 6-point scale, where higher scores reflect higher levels of corruption. In effect, it would be understood that countries with higher scores on this variable would have less controlled rulers, and therefore, with greater capacity to engage in acts of predation and political corruption. This variable is available for 146 countries from 1984 to 2017.

#### **4.6. Control variables**

To construct the set of control variables, the research takes as a reference empirical studies that have successfully estimated the evolution (either static or dynamic) of annual growth during the irruption of political transformations. Thus, building on the contributions of 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), primary and secondary education enrollment rate, and infant mortality rate, all from the World Bank Development Indicators (WDI). In addition, we also include as controls the level of total factor productivity (henceforth TFP) in constant national prices from the Penn World Table version 10.0 (PWT 10.0) 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, Naidu, Restrepo, and Robinson (2019) from the Cross-National Time-Series Data Archive of Banks and Wilson (2013). Finally, some lags of the dependent variable are included to keep GDP dynamics in check (Acemoglu et al. 2019, 57).

The next subsection presents the econometric model implemented to estimate the impact of EC on economic growth. These estimations mainly use Static and Dynamic Panel (Linear) Models that are conducive to controlling for the potential heterogeneity of cross-sectional and temporal units, and the dynamic characteristics of GDP (Acemoglu, Naidu, Restrepo, and Robinson 2019, 57).

The baseline model evaluates the direct impact of having other relevant determinants of development as controls. Later, we estimate the relative economic performance of each setting.

#### 4.7. Econometric model

The observations in the database are arranged around a panel data structure in which each entity  $n$  (corresponding to the countries included in the sample) is observed at different periods  $T$  (corresponding to the years covered by the study). In econometric terms, the standard panel data model is represented by the following equation:

$$y_{it} = \beta_0 + \beta x'_{it} + \mu_{it} \quad (1)$$

Where subscript  $i$  reflects the entity being observed (for each country  $i = 1, \dots, n$ ), and  $t$  the period over which it is observed (for each year  $t = 1, \dots, T$ ),  $y_{it}$  is the dependent variable,  $\beta_0$  the intercept,  $x'_{it}$  is a vector of explanatory variables, and  $\mu_{it}$  is the error term.

For Clark and Linzer (2015), empirical research frequently faces challenges related to variations that occur at the level of groups or clusters. Consequently, variations in the dependent variable to be analyzed may be a function of the characteristics of these groups and not of what the key independent variables alone can explain (Clark and Linzer 2015, 399). This is a common situation when analyzing panel data, and it is much more troubling when dealing with large samples with country-year observations. To overcome these problems, some strategies use the time or cross-sectional dimension to control for unobserved omitted variables (Angrist and Pischke 2009, 221). These strategies usually rely on the implementation of fixed effects or random effects. Fixed effects refer to a series of dummy variables that capture information about the units from which the data was taken (Clark and Linzer 2015, 399), while random effects refer to an estimator that assumes that the individual effects of these units are uncorrelated with the regressors.

Hausman's (1978) specification test is commonly used to determine the suitability of using one or the other type of effect. Thus, we can test two variations of the model: one with fixed effects and the other with random effects. A significant test result (i.e., a result that allows rejection of the null hypothesis) is usually taken as evidence that there is a correlation between the model's regressors and the individual unit effects, implying a violation of the central assumption of random effects modeling. While this test is performed in the following sections of the research, a first approximation is to implement a panel data specification with fixed effects due to the large number of countries observed (143) over the long period covered by the study (from 1950 to 2010). This specification incorporates entity fixed effects (cross-sectional unit) that control for variables that are constant over time but vary across entities, and time fixed effects (time unit) that control for variables that are constant across entities, but evolve over time (Stock and Watson 2020, 371).

For the particular case of the research, entity fixed effects 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 some countries (Papaioannou and Siourounis 2008, 1525). On the other hand, time-fixed effects would 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), the model specification includes a certain number of  $p$  lags of the dependent variable (natural logarithm of GDP per capita), which allows for controlling for GDP dynamics. The inclusion of this term modifies the static nature of the specification presented in Equation 1, resulting in a dynamic panel model. According to Acemoglu et al. (2019, 57), a standard assumption of this type of model is (formally described as “sequential exogeneity”) that the key independent variable and past values of the dependent are orthogonal to current and future values of the dependent, and that the error term has no serial autocorrelation. For this reason, this specification requires the incorporation of 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).

In summary, a dynamic panel model with country and year-fixed effects is proposed to estimate the effect of EC on economic growth. This specification is formally represented in the following equation:

$$Y_{it} = \alpha_i + \delta_t + \beta HC_{it} + \lambda VC_{it} + \vartheta(HC \times VC)_{it} + \sum_{j=1}^p \gamma_j Y_{it-j} + \eta X'_{it} + \varepsilon_{it} \quad (2)$$

Where the subscript  $i$  represents 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.  $\alpha_i$  is a country-specific fixed effect, and  $\delta_t$  the year fixed effect, both represented as vectors of dichotomous variables for each cross-sectional and temporal unit.  $\beta$  is the coefficient that captures the impact of horizontal constraints  $HC_{it}$ , and  $\lambda$  the impact of vertical constraints  $VC_{it}$ . Coefficient  $\vartheta$  the effect of the interaction between  $HC_{it}$  and  $VC_{it}$ . Since both variables are binary or dichotomous, this multiplicative term would report coefficients of all possible combinations between both, which would generate a serious multicollinearity problem. For such reason, this interaction term only reports the coefficient of the presence of both EC (when their respective coding is equal to 1) as compared to their absence.  $\gamma_j$  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  $\gamma_j$  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.  $Y_{it-8}$ . This term represents the dynamic characteristic of the panel model, and its inclusion allows controlling for the dynamics of GDP and other relevant economic factors.  $\eta$  is the coefficient of a set of control variables,  $X'_{it}$ , described above: investment, infant mortality, primary and secondary schooling, trade, fiscal revenue, social unrest, and market reforms. Finally,  $\varepsilon_{it}$  is the error term.

## 5. The Effects of Executive Constraints

Table 3 describes the summary statistics for the key numerical variables in averages for the period studied. The first row reports statistics for the dependent variable: GDP per capita. The other rows detail the same information for the influence channels and the control variables. From the values in the second column, it is possible to identify certain limitations of the variables based on the number of observations. In particular, the variables obtained from the ICRG information have a relatively smaller number of country-year observations (3,171 observations) than the other variables. For the general specification presented in equation 2, this is not a problem since these variables are not part of the controls to identify the direct effect of EC on growth.

**Table 3.** Descriptive statistics of key numerical variables (averages from 1950-2010)

| Variable                         | N     | Mean      | St. Dev.  | Min     | Median    | Max       |
|----------------------------------|-------|-----------|-----------|---------|-----------|-----------|
| GDP per capita                   | 7,163 | 5,126.586 | 5,896.714 | 203.413 | 2,674.903 | 42,916.24 |
| Investment Profile (0-12)        | 3,171 | 7.093     | 2.562     | 0.00    | 7.00      | 12.00     |
| Human capital index              | 6,292 | 1.961     | 0.684     | 1.007   | 1.839     | 3.703     |
| TFP in const. nat. prices        | 4,712 | 0.974     | 0.411     | 0.202   | 0.926     | 8.121     |
| Government Stability (0-12)      | 3,171 | 7.541     | 2.239     | 0.667   | 7.750     | 12.00     |
| Corruption (0-6)                 | 3,171 | 3.018     | 1.366     | 0.00    | 3.00      | 6.00      |
| Investment share of GDP          | 5,296 | 0.225     | 0.088     | -0.134  | 0.220     | 0.953     |
| Infant mortality rate            | 6,374 | 60.866    | 48.740    | 2.200   | 49.250    | 232.00    |
| Primary-school enrollment rate   | 4,747 | 93.246    | 24.401    | 2.831   | 100.487   | 177.582   |
| Secondary-school enrollment rate | 4,051 | 56.391    | 34.070    | 0.00    | 56.692    | 161.019   |
| Trade share of GDP               | 5,451 | 0.661     | 0.451     | 0.0002  | 0.557     | 4.373     |
| Tax revenue share of GDP         | 5,339 | 0.178     | 0.098     | 0.002   | 0.159     | 0.703     |
| Market reforms index (0-100)     | 5,136 | 38.464    | 27.038    | 0.00    | 37.458    | 97.496    |

*Source:* The author.

Table 4 describes basic GDP per capita statistics for seven geographic regions following the World Bank classification. The regions that have on average the best economic performance are North America (which groups 2 countries and with 122 observations represents 1.6 percent of the total country-year observations in the sample), Europe and Central Asia (29 countries and 20.2 percent with 1534 observations), Middle East and North Africa (18 countries and 12.8 percent with 972 observations), and East Asia and the Pacific (20 countries and 14.4 percent with 1092 observations). This was followed by Latin America and the Caribbean (24 countries and 18.4 percent with 1399 observations), Sub-Saharan Africa (43 countries and 27.3 percent with 2078 observations), and South Asia (7 countries and 5.3 percent with 406 observations).

**Table 4.** Basic GDP statistics by region (averages between 1950-2010)

| Region                          | Countries | Median    | St. Dev. | N    | Share <sup>23</sup> |
|---------------------------------|-----------|-----------|----------|------|---------------------|
| East Asia and the Pacific       | 20        | 5388.673  | 6313.075 | 1092 | 0.143               |
| Europe and Central Asia         | 29        | 10507.648 | 6538.166 | 1534 | 0.202               |
| Latin America and the Caribbean | 24        | 4178.952  | 2739.967 | 1399 | 0.184               |
| Middle East and North Africa    | 18        | 5848.303  | 5848.345 | 972  | 0.128               |
| North America                   | 2         | 17582.552 | 6584.606 | 122  | 0.016               |
| South Asia                      | 7         | 1198.766  | 835.424  | 406  | 0.053               |
| Sub-Saharan Africa              | 43        | 1414.063  | 1722.766 | 2078 | 0.273               |

*Source:* The author.

The following tables report basic statistics for each dichotomous classification of the HConst and VConst variables that capture information on the presence/absence of horizontal and vertical constraints respectively. Table 5 reports the summary statistics for countries and observations that were coded as horizontally unconstrained (absence of HC), and horizontally constrained (presence of HC). Countries coded as horizontally constrained appear to perform better economically than their unconstrained counterparts (with a difference of \$5128.94 in favor of the former). In terms of infant mortality rate per 1000 births, there is a difference of almost 49 percentage points between the two groups. In particular, unconstrained countries have a disturbingly much higher rate (83.2 percent). On the other hand, horizontally constrained countries appear to have higher levels of both primary (difference of 14.9 percent) and secondary schooling (difference of 36.7 percent), a higher index of market reforms (difference of 25.3 points), a moderately higher human capital index (difference of 0.8 points), a moderately higher protection of property rights implying lower investment risk (difference of 1.6 points), and a moderately lower level of corruption (difference of 0.9 points). In contrast, there are no significant differences in factors such as productivity, government stability, the level of investment in physical capital, trade, and tax revenue.

**Table 5.** Statistical summary for the presence and absence of horizontal constraints

|                           | Horizontally unconstrained |          |          | Horizontally constrained |          |          |
|---------------------------|----------------------------|----------|----------|--------------------------|----------|----------|
|                           | N                          | Median   | St. Dev  | N                        | Median   | St. Dev. |
| GDP per capita            | 3817                       | 2983.741 | 3850.625 | 3060                     | 8112.681 | 6825.808 |
| Investment Profile (0-12) | 1274                       | 6.276    | 2.265    | 1773                     | 7.901    | 2.423    |
| Human capital index       | 2966                       | 1.568    | 0.445    | 3143                     | 2.359    | 0.651    |
| TFP in const. nat. prices | 1914                       | 1.066    | 0.556    | 2711                     | 0.913    | 0.251    |

<sup>23</sup> This column denotes the share of country-year observations “N” for each region with respect to the total number of observations in the sample (the sample size corresponds to 143 countries between 1950 and 2010, giving a total of 7603 country-year observations).

|                                  |      |        |        |      |         |        |
|----------------------------------|------|--------|--------|------|---------|--------|
| Government Stability (0-12)      | 1274 | 7.496  | 2.482  | 1773 | 7.704   | 1.933  |
| Corruption (0-6)                 | 1274 | 2.512  | 1.029  | 1773 | 3.469   | 1.413  |
| Investment share of GDP          | 2530 | 0.219  | 0.103  | 2617 | 0.235   | 0.069  |
| Infant mortality rate            | 3172 | 83.189 | 48.341 | 2951 | 34.434  | 34.132 |
| Primary-school enrollment rate   | 2337 | 86.298 | 28.494 | 2285 | 101.188 | 15.012 |
| Secondary-school enrollment rate | 1958 | 38.429 | 27.546 | 1999 | 75.142  | 29.702 |
| Trade share of GDP               | 2608 | 0.644  | 0.505  | 2692 | 0.685   | 0.394  |
| Tax revenue share of GDP         | 2783 | 0.158  | 0.093  | 2337 | 0.205   | 0.097  |
| Market reforms index (0-100)     | 2519 | 26.444 | 22.538 | 2438 | 51.709  | 25.175 |

*Source:* The author.

Table 6 reports statistics for the case of countries and observations that were coded as not vertically constrained (absence of VC), and vertically constrained (presence of VC). Countries coded as vertically constrained appear to have higher levels of economic performance as measured by GDP per capita (there is a difference of \$4780.7 in favor of the former). Unconstrained countries appear to have a much higher rate of infant mortality (83.2 percent) than their constrained counterparts (34.4 percent). In terms of schooling level, constrained countries have higher primary and secondary enrollment rates (percentage differences in favor of 14.9 and 36.7, respectively). Likewise, there are moderate differences in favor of the constrained countries in terms of factors such as lower investment risk (difference of 1.6 points), higher human capital index (difference of 0.7 points), lower corruption (difference of 0.9 points), and higher market reform index (difference of 25 points). Finally, there are no substantial differences in the level of productivity, government stability, investment in physical capital, trade, and tax revenue.

**Table 6.** Statistical summary for the presence and absence of vertical constraints

|                                | Vertically unconstrained |          |          | Vertically constrained |         |          |
|--------------------------------|--------------------------|----------|----------|------------------------|---------|----------|
|                                | N                        | Median   | St. Dev. | N                      | Median  | St. Dev. |
| GDP per capita                 | 3537                     | 2944.051 | 3832.785 | 3340                   | 7724.74 | 6759.853 |
| Investment Profile (0-12)      | 1148                     | 6.28     | 2.25     | 1899                   | 7.79    | 2.457    |
| Human capital index            | 2720                     | 1.56     | 0.43     | 3389                   | 2.309   | 0.671    |
| TFP in const. nat. prices      | 1731                     | 1.084    | 0.575    | 2894                   | 0.912   | 0.251    |
| Government Stability (0-12)    | 1148                     | 7.426    | 2.488    | 1899                   | 7.733   | 1.965    |
| Corruption (0-6)               | 1148                     | 2.509    | 1.031    | 1899                   | 3.408   | 1.409    |
| Investment share of GDP        | 2312                     | 0.221    | 0.103    | 2835                   | 0.233   | 0.072    |
| Infant mortality rate          | 2937                     | 83.843   | 48.45    | 3186                   | 37.428  | 36.729   |
| Primary-school enrollment rate | 2203                     | 86.583   | 28.81    | 2419                   | 100.104 | 16.13    |

|                                  |      |        |        |      |        |        |
|----------------------------------|------|--------|--------|------|--------|--------|
| Secondary-school enrollment rate | 1834 | 38.415 | 27.549 | 2123 | 73.01  | 30.793 |
| Trade share of GDP               | 2411 | 0.651  | 0.483  | 2889 | 0.676  | 0.425  |
| Tax revenue share of GDP         | 2568 | 0.159  | 0.095  | 2552 | 0.2    | 0.096  |
| Market reforms index (0-100)     | 2301 | 25.451 | 22.5   | 2656 | 50.496 | 25.13  |

*Source:* The author.

To contrast the information presented in the previous tables, Table 7 reports summary statistics of observations coded as democracies and non-democracies based on the dichotomous classification of Boix, Miller and Rosato (2012). Again, some familiar patterns can be observed such as democracies are on average richer than non-democracies (with a difference of \$5574.5), have a much lower infant mortality rate per 1000 births (with a difference of 48, 2 percentage points), have a more educated population (with a difference in favor of 12.9 percent for primary schooling and 35.9 percent for secondary schooling), and have a higher market reforms score than their counterparts (difference of 24.8 points). There are moderate differences between the two regimes in indicators such as the protection of property rights (difference of 1.8 points in favor of democracies), the human capital index (difference of 0.8 points in favor of democracies), and the level of corruption (difference of 1.1 points in favor of democracies). Finally, there appear to be no significant differences in the level of productivity, government stability, investment in physical capital, trade, and tax revenue.

**Table 7.** Statistical summary by regime type

|                                  | Non democracies |          |           | Democracies |          |           |
|----------------------------------|-----------------|----------|-----------|-------------|----------|-----------|
|                                  | N               | Media    | Des. Est. | N           | Media    | Des. Est. |
| GDP per capita                   | 4230            | 2891.595 | 3763.51   | 2890        | 8466.073 | 6832.535  |
| Investment Profile (0-12)        | 1478            | 6.158    | 2.312     | 1685        | 7.934    | 2.467     |
| Human capital index              | 3279            | 1.592    | 0.449     | 2980        | 2.378    | 0.658     |
| TFP in const. nat. prices        | 2116            | 1.053    | 0.535     | 2596        | 0.91     | 0.252     |
| Government Stability (0-12)      | 1478            | 7.367    | 2.521     | 1685        | 7.713    | 1.929     |
| Corruption (0-6)                 | 1478            | 2.436    | 1.075     | 1685        | 3.53     | 1.393     |
| Investment share of GDP          | 2809            | 0.217    | 0.101     | 2475        | 0.235    | 0.068     |
| Infant mortality rate            | 3577            | 81.588   | 47.899    | 2770        | 33.372   | 33.722    |
| Primary-school enrollment rate   | 2571            | 87.647   | 28.056    | 2154        | 100.573  | 15.49     |
| Secondary-school enrollment rate | 2125            | 39.483   | 27.47     | 1915        | 75.417   | 30.445    |
| Trade share of GDP               | 2932            | 0.654    | 0.494     | 2519        | 0.669    | 0.394     |
| Tax revenue share of GDP         | 3101            | 0.158    | 0.092     | 2205        | 0.206    | 0.098     |
| Market reforms index (0-100)     | 2772            | 27.353   | 23.575    | 2331        | 52.112   | 24.557    |

*Source:* The author.

Finally, Table 8 describes basic GDP statistics based on the typology presented in Table 1. This typology describes four categories denoting four different types of rulers constructed based on the presence and/or absence of HC and VC: Committed and accountable rulers (3297 country-year observations representing 43.4 percent of the sample), uncommitted but accountable (340 country-year observations representing 4.5 percent of the sample), committed but unaccountable (63 country-year observations representing 0.8 percent of the sample), and neither committed nor accountable ones (3601 country-year observations representing 47.4 percent of the sample). On average, countries coded with committed and accountable rulers have a higher level of economic growth than countries classified with other types of rulers. Interestingly, countries with uncommitted but accountable rulers are on average richer than countries with no constraints at all, and exhibit more than twice the economic performance of countries coded with committed but not accountable rulers. The standard deviation of GDP per capita as a function of each category presents similar patterns to those reviewed so far. That is, the distribution of the dependent variable for countries coded with the first category appears to be much more dispersed than the distributions for the remaining categories. The dispersion of GDP per capita for countries with uncommitted but accountable rulers is moderately smaller than for countries with no constraints. Countries coded as committed but not accountable have a much less dispersed distribution of GDP per capita.

**Table 8.** Basic GDP statistics by type of ruler

| Type of ruler                     | Countries | Median   | St. Dev. | N    | Share |
|-----------------------------------|-----------|----------|----------|------|-------|
| Committed and accountable         | 112       | 8225.372 | 6822.157 | 3297 | 0.434 |
| Uncommitted but accountable       | 49        | 3142.964 | 3835.616 | 340  | 0.045 |
| Committed but unaccountable       | 10        | 1187.902 | 969.056  | 63   | 0.008 |
| Neither committed nor accountable | 105       | 2968.722 | 3852.246 | 3601 | 0.474 |

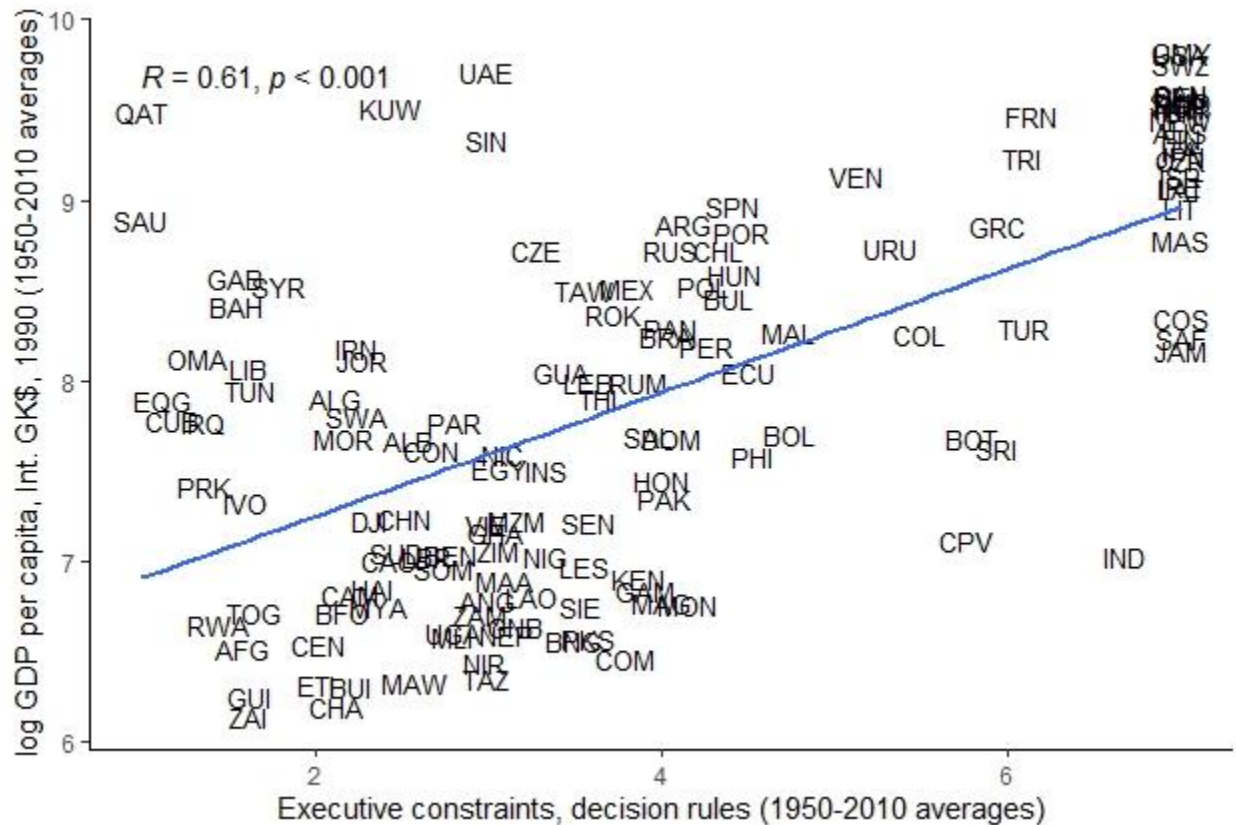
*Source:* The author.

The following figures present scatter plots between the log transformation of GDP per capita and the Polity IV measures (xconst and xrcomp variables) that were used to generate the dichotomous measures of HC and VC. Figure 1 presents a scatter plot between GDP per capita and the Polity IV measure of executive constraints, both variables averaged over the period 1950-2010. Countries were reported with their respective abbreviations based on the World Bank nomenclature. The blue line represents a linear regression generated to simulate the relationship between the variables described in the plot. In addition, a Pearson correlation coefficient and its respective p-value have been computed. From its values (reported in the upper right corner of the graph) we can determine that there is a positive and moderately strong correlation between the two variables. Specifically, the coefficient presents a value of 0.61 out of 1, and its p-value is less than 0.001 (therefore, the null hypothesis that the coefficient obtained comes from a population whose correlation is zero is rejected). 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. Another aspect to take into account in the plot is the existence of several outliers such as the United Arab Emirates, Kuwait, Qatar,



Singapore, and Saudi Arabia. What is interesting is that these countries are cases in which there is a high level of GDP per capita, but whose indicators of executive restraint are low.

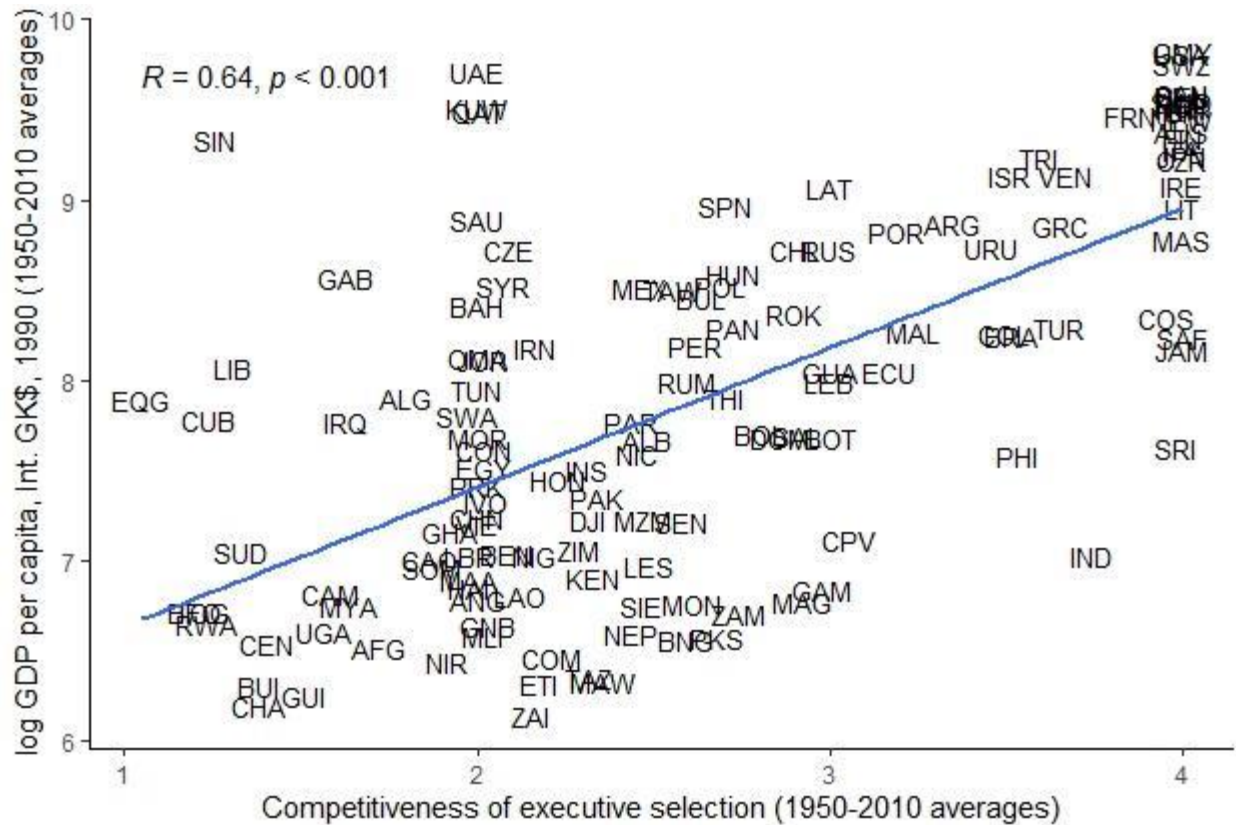
**Figure 1.** Relationship between executive constraints and GDP per capita



Source: The author from Bolt and van Zanden (2014), and Polity IV.

Figure 2 presents a scatter plot between GDP per capita and the Polity IV competitiveness of executive selection measure, both variables averaged over the period 1950-2010. As in the previous figure, the Pearson correlation coefficient reports a positive and moderately strong correlation between the two variables. In particular, the coefficient presents a value of 0.64 out of 1, and its p-value is less than 0.001. This means that the more competitive the political process for selecting the executive in a country is the higher the level of growth measured by the natural logarithm of GDP per capita. It should be noted that these observations are descriptive but not causal in nature. Additionally, the figure also presents some outlier cases. United Arab Emirates, Kuwait, Qatar, and Singapore again show high levels of GDP per capita, but much lower levels in the competitiveness indicator.

**Figure 2.** Relationship between competitiveness and GDP per capita



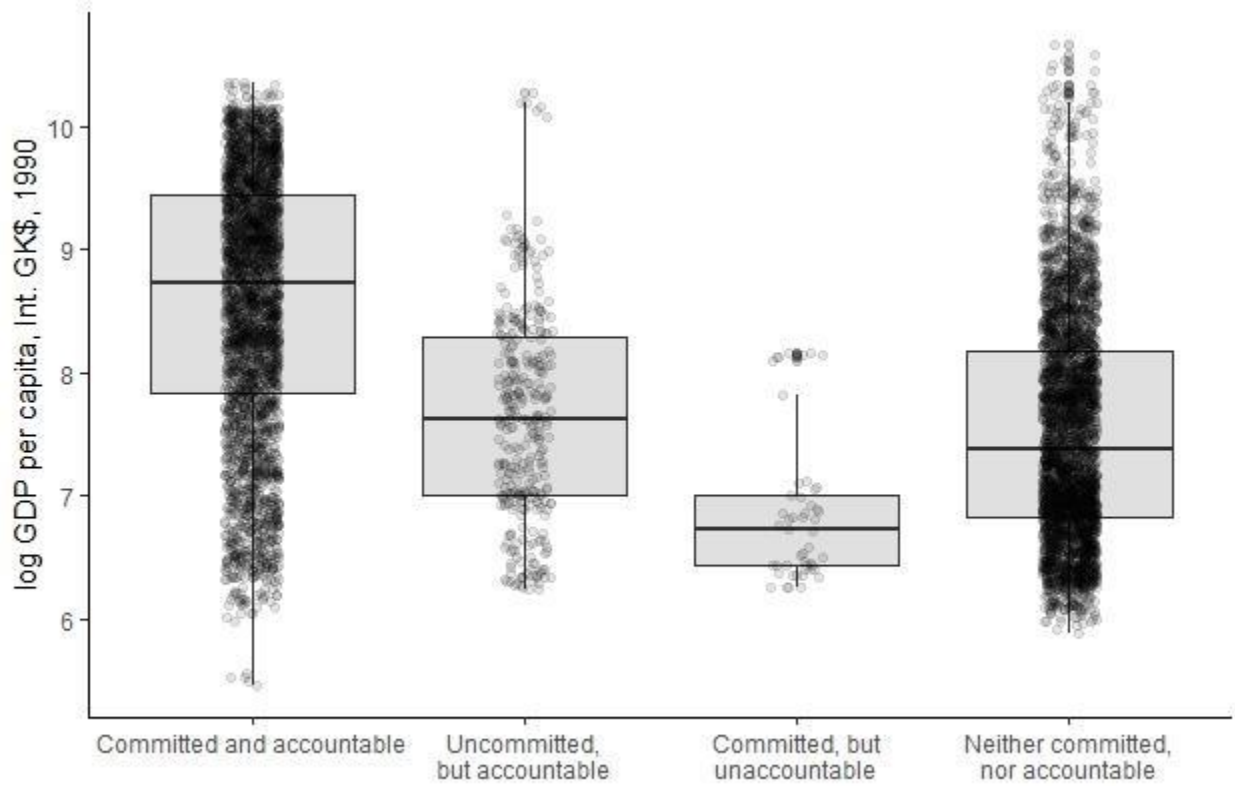
*Source:* The author from Bolt and van Zanden (2014), and Polity IV.

Finally, Figure 3 reports a box plot with information on GDP per capita (in its logarithmic transformation) and the typology of rulers constructed for this research. Here we can observe an apparent positive relationship between countries coded with committed and accountable rulers and the level of GDP per capita. The two intermediate categories report a decreasing relationship, while the fourth category presents a higher level of development than the third, but no higher than the second and much lower than the first. The pattern of observations represented as dots in the diagrams fits some of the empirical descriptions already mentioned. In particular, if we look at the first and fourth boxes, we can see a higher concentration of observations at higher levels of GDP per capita for the case of countries coded with committed and accountable rulers, and a higher concentration of observations at lower levels of GDP per capita for countries with neither committed nor accountable rulers.

Based on the correlations presented, it can be concluded that at least descriptively there is a strong and positive relationship between GDP per capita and measures that capture information on democratic political institutions in general, and our conceptualization of constraints on the executive in particular. Accordingly, there seems to be a higher degree of economic development in political systems characterized as democratic (as defined by Boix, Miller, and Rosato 2012), with the presence of horizontal and/or vertical constraints (both according to different Polity IV

definitions and measurements), and with committed and accountable rulers (according to the variable constructed for this research).

**Figure 3.** GDP per capita and type of ruler



*Source:* The author with information from Bolt and van Zanden (2014).

### 5.1. Estimation results

Recall Equation 2 presented in the following terms:

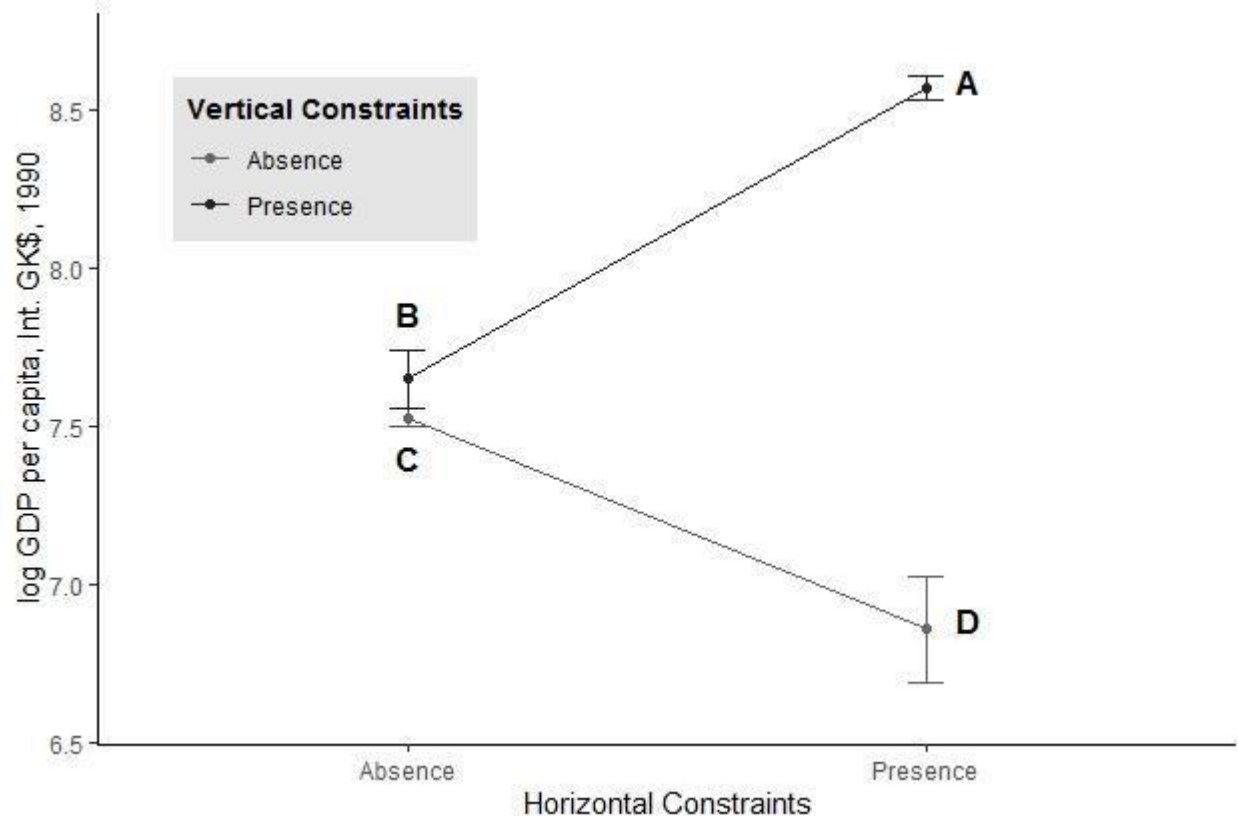
$$Y_{it} = \alpha_i + \delta_t + \beta HC_{it} + \lambda VC_{it} + \vartheta(HC \times VC)_{it} + \sum_{j=1}^p \gamma_j Y_{it-j} + \eta X'_{it} + \varepsilon_{it} \quad (2)$$

Here, the key coefficients to interpret the effect of the EC are  $\beta$ ,  $\lambda$ , and  $\vartheta$ . The first two coefficients represent the effect of each type of EC separately, while the third one reflects the effect of the interaction between both institutions. Figure 4 reports an interaction plot for the natural logarithm of GDP per capita (averaged for the period 1950-2010) as a function of the presence and/or absence of HC and VC. The trajectories illustrated in the figure reveal that combinations of the two institutions appear to manifest themselves in the form of synergistic interaction, also called a “reinforcing interaction effect” (Ford 2016). This type of interaction occurs when two variables combine to amplify an effect. Therefore, the average GDP per capita for countries with the absence of both EC (or countries with neither committed nor responsible rulers in our typology, spatially located at point C in the figure) is lower than the average GDP for countries with the presence of VC and absence of HC (uncommitted but responsible rulers located at point B in the figure).

However, the average GDP of dictatorships appears to be substantially low when compared to the cases of countries that have only introduced HC (point D in the figure). In contrast, for the case of countries that have already introduced VC, the introduction of HC (point A in the figure) seems to substantially favor their growth prospects.

These observations have important implications. First, they provide empirical evidence that there is a relevant interaction between HC and VC, in which their different combinations are associated with different economic outcomes. Second, the figure also suggests that the order in which different political institutions were introduced across societies matters for growth. The most relevant observation is that the joint impact of both constraints on the executive appears to be notably larger than the sum of their individual impacts. In particular, the introduction of horizontal constraints on the executive is found to be of much greater economic benefit to countries that have already introduced vertical constraints, compared to countries with no constraints at all.

**Figure 4.** Log GDP per capita (averaged over 1950-2010) as a function of executive constraints



**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). Observations were codified as horizontally constrained when they have at least “substantial constraints” on the Polity IV executive constraints indicator (Marshall and Gurr, 2020). Observations were codified as vertically constrained when at least one of the chief executives was elected as a result of a competitive election, as measured by the indicator “competitiveness of executive selection” on Polity IV. GDP information came from the Maddison Project (Bolt and van Zanden 2014).

The following tables report the results of estimations made from different specifications derived from Equation 2. Because our key independent variables are dichotomous, their interaction constructs four different combinations, each with their respective regression coefficients. Including all these combinations in the estimation model inevitably produces multicollinearity problems. One option to solve this problem is to omit one or two categories and interpret the coefficients of the included categories based on the omitted ones. This would imply omitting two categories out of the four possible combinations, but would not allow us to control for the impact of HC and VC. Therefore, we have opted to keep the interaction in equation 2, and let the interaction only account for the combinations combining coding 1 (presence of each EC). In other words, the coefficient  $\beta$  in equation 2 will represent the effect of the presence of HC (compared to its absence), the coefficient  $\lambda$  will represent the presence of VC (compared to its absence), and the coefficient  $\vartheta$  will depict the presence of both EC (compared to their absence).

Table 9 provides estimates of the effect of EC on log GDP per capita, controlling for unobservable country characteristics (individual fixed effects) and common global trends (time fixed effects). Columns 1 and 5 report estimates of a static panel with fixed effects, that is, our baseline model without including lags of the dependent variable. Columns 2-4 and 6-8 report these same estimates controlling for different numbers of lags. 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.

We conducted the Hausman test to formally choose between a model with random or fixed effects. The result of the test gave a p-value of less than 0.05. Therefore, the null hypothesis that the random model is consistent, and consequently there is a correlation between the regressors of the model and the individual unit effects, is rejected. In addition, Lagrange's multiplicative fixed effects test for unbalanced panels is suitable to identify significant effects between our model with individual fixed effects and country and year fixed effects. Its result was a p-value of less than 0.05, so the alternative hypothesis that the model with both effects is consistent is accepted.

With these considerations in mind, it would be appropriate to interpret the coefficients presented between columns 6, 7, and 8 of the table. Column 6 controls for two lags of the dependent variable. The coefficient of the binary HC indicator is negative and highly significant (coefficient of -0.20, and standard error of 0.06). The estimates of VC are not significantly different from zero, so it is inferred that this institution does not have an effect on growth when controlling for other determinants of GDP, the impact of HC, and its interaction with the latter. On the other hand, the interaction between HC and VC presents a positive and highly significant coefficient (coefficient of 0.17 and standard error of 0.05). In addition, the value and direction of the coefficients are insensitive to other specifications with larger controls. For example, column 8 of the table includes eight lags of the dependent variable, and the coefficients of our independent variables undergo very little change. However, in this specification, it can be identified that from the inclusion of the fourth lag, these variables no longer significantly affect the dependent variable.

**Table 9.** The effect of executive constraints on log GDP per capita (fixed effects estimates)

|                           | OLS with individual fixed effects |                    |                    |                    | OLS with individual and time fixed effects |                    |                    |                    |
|---------------------------|-----------------------------------|--------------------|--------------------|--------------------|--|--------------------|--------------------|--------------------|
|                           | (1)                               | (2)                | (3)                | (4)                | (5)  | (6)                | (7)                | (8)                |
| Horizontal constraints    | -.712***<br>(.133)                | -.185***<br>(.029) | -.191***<br>(.061) | -.204***<br>(.074) | -.664***<br>(.143)                         | -.200***<br>(.060) | -.205***<br>(.064) | -.219***<br>(.073) |
| Vertical constraints      | .007<br>(.036)                    | .011<br>(.012)     | .010<br>(.011)     | -.002<br>(.013)    | .019<br>(.038)                             | .006<br>(.011)     | .003<br>(.011)     | -.008<br>(.013)    |
| Horizontal × Vertical     | .632***<br>(.141)                 | .153***<br>(.031)  | .161***<br>(.055)  | .184***<br>(.069)  | .591***<br>(.150)                          | .174***<br>(.053)  | .182***<br>(.058)  | .206***<br>(.069)  |
| Investment share of GDP   | .719***<br>(.110)                 | .253***<br>(.032)  | .279***<br>(.053)  | .289***<br>(.060)  | .600***<br>(.104)                          | .242***<br>(.047)  | .270***<br>(.048)  | .284***<br>(.056)  |
| Infant mortality rate     | -.002***<br>(.001)                | -.0002<br>(.0001)  | -.0001<br>(.0002)  | -.00004<br>(.0002) | -.001<br>(.001)                            | -.0004<br>(.0002)  | -.0003<br>(.0002)  | -.0002<br>(.0002)  |
| Human capital index       | .755***<br>(.056)                 | .206***<br>(.010)  | .200***<br>(.049)  | .214***<br>(.051)  | .595***<br>(.071)                          | .207***<br>(.060)  | .206***<br>(.059)  | .217***<br>(.062)  |
| Trade share of GDP        | .038<br>(.035)                    | -.004<br>(.008)    | -.001<br>(.008)    | -.003<br>(.009)    | .071**<br>(.033)                           | -.0005<br>(.008)   | .0001<br>(.008)    | -.004<br>(.010)    |
| TFP in const. nat. prices | .372***<br>(.042)                 | .115***<br>(.007)  | .113***<br>(.031)  | .112***<br>(.030)  | .324***<br>(.043)                          | .113***<br>(.033)  | .109***<br>(.031)  | .109***<br>(.031)  |
| Tax revenue share of GDP  | .528***<br>(.133)                 | .196***<br>(.032)  | .209**<br>(.092)   | .227***<br>(.085)  | .479***<br>(.132)                          | .208**<br>(.087)   | .223**<br>(.088)   | .236***<br>(.081)  |
| Social unrest             | -.056***<br>(.013)                | -.021***<br>(.006) | -.025***<br>(.006) | -.025***<br>(.006) | -.053***<br>(.012)                         | -.021***<br>(.006) | -.024***<br>(.006) | -.025***<br>(.006) |
| Log GDP, first lag        |                                   | .502***<br>(.012)  | .445***<br>(.094)  | .444***<br>(.090)  |  | .491***<br>(.072)  | .433***<br>(.091)  | .431***<br>(.087)  |
| Log GDP, second lag       |                                   | .284***<br>(.011)  | .170***<br>(.046)  | .165***<br>(.053)  |  | .283***<br>(.038)  | .167***<br>(.046)  | .158***<br>(.053)  |

|                         |      |      |                   |                   |      |      |                   |                   |
|-------------------------|------|------|-------------------|-------------------|------|------|-------------------|-------------------|
| Log GDP, third lag      |      |      | .177***<br>(.062) | .173***<br>(.051) |      |      | .177***<br>(.061) | .167***<br>(.051) |
| Log GDP, fourth lag     |      |      | .003<br>(.060)    | -.001<br>(.057)   |      |      | .016<br>(.059)    | .001<br>(.056)    |
| Log GDP, fifth lag      |      |      |                   | .077<br>(.086)    |      |      |                   | .079<br>(.085)    |
| Log GDP, sixth lag      |      |      |                   | -.031<br>(.065)   |      |      |                   | -.023<br>(.065)   |
| Log GDP, seventh lag    |      |      |                   | -.104<br>(.073)   |      |      |                   | -.095<br>(.072)   |
| Log GDP, eight lag      |      |      |                   | .057<br>(.051)    |      |      |                   | .066<br>(.050)    |
| R <sup>2</sup>          | .542 | .819 | .814              | .789              | .293 | .699 | .700              | .675              |
| R <sup>2</sup> Adjusted | .532 | .815 | .810              | .784              | .273 | .690 | .691              | .664              |
| Observations            | 7603 | 7317 | 7031              | 6459              | 7603 | 7317 | 7031              | 6459              |
| Countries in the sample | 143  | 143  | 143               | 143               | 143  | 143  | 143               | 143               |

*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 1-4 present the results for the estimator with individual fixed effects, and columns 5-8 for the estimator with individual and time fixed effects. Robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses. Columns 1 and 5 report results for the static panel analysis, while the remaining columns report results for the dynamic panel. Columns 2 and 6 include two lags of the dependent variable, columns 3 and 7 include four, and columns 4 and 8 include eight lags as controls.

*Source:* The author.

Our preferred specification in Table 9 is the one presented in column 7, which includes four lags of the dependent variable. The coefficient for the binary HC indicator is now -0.205 (standard error of 0.064). The estimate presents a negative and highly significant relationship between HC and growth (99 percent confidence level). This suggests that the exclusive presence of HC is associated with a decrease of about 0.21 percent of GDP per capita, conditional on the controls included in the model (other growth determinants, VC performance alone, the interaction performance, and a number of lags of the dependent variable). The coefficient of the binary VC indicator remains not significantly different from zero, so the presence of VC seems not to affect economic growth. In contrast, the interaction between HC and VC denoting country-year observations coded with committed and accountable rulers presents a positive and highly significant coefficient (coefficient of 0.18 and standard error of 0.058). This suggests that the presence of both EC is associated with a 0.18 percent increase in GDP per capita, compared to the absence of both institutions and conditional on the controls included in the model.

Estimates with fixed effects from dynamic panel models such as those presented in Table 9 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 2 may be correlated with the idiosyncratic and non-stochastic characteristics of the cross-sectional units (Montero 2010). Table 10 provides estimates with the Generalized Method of Moments (GMM) that potentially addresses this bias. This estimator uses instrumental variables based on the lags of the dependent variable and differences of the other variables in the model (Montero 2010, 1). Columns 1, 2 and 3 present results with the systematic MGM estimator of Blundell and Bond (1998), while columns 4, 5 and 6 present results with the difference MGM estimator of Arellano and Bond (1991). Columns 1 and 4 include two lags as controls, columns 3 and 5 include four, and columns 4 and 6 include eight.

Our preferred specification is the one presented in column 2 which includes four lags and is estimated with the systematic MGM. Most patterns observed in previous specifications are maintained. The coefficient of the binary indicator of HC is negative and highly significant (coefficient of -0.46 and standard error of 0.14). This suggests that the exclusive presence of HC is associated with a decrease of about 0.46 percent of GDP per capita, keeping everything else constant. VC do not appear to have a significant impact on growth. However, the indicator capturing information on the presence of both EC has a positive and highly significant coefficient (coefficient of 0.22 and standard error of 0.07). This suggests that the presence of both institutions is associated with an increase of around 0.22 percent in GDP per capita, conditional on the controls included in the model.

Lastly, Table 11 reports fixed effects estimates for the relationship between LE and several possible influence channels (some derived from theory and others from the controls used in previous analyses). The results obtained suggest that there is no significant impact between our institutional settings and channels such as investment in physical capital, secondary education, and government stability. On the other hand, coded observations with committed and accountable rulers are



associated with increases in channels such as the human capital index (at a 90 percent confidence level), primary education, corruption (higher index values represent lower levels of corruption), and tax revenue. In contrast, this institutional setting is negatively associated with the government stability index, total factor productivity (TFP), and infant mortality rate. All these relationships should be viewed in terms of the observations coded with the absence of both constraints.

**Table 10.** The effect of executive constraints on log GDP per capita (GMM estimates)

|                           | GMM Blundell and Bond (1998) |                     |                     | GMM Arellano and Bond (1991) |                    |                    |
|---------------------------|------------------------------|---------------------|---------------------|------------------------------|--------------------|--------------------|
|                           | (1)                          | (2)                 | (3)                 | (4)                          | (5)                | (6)                |
| Horizontal constraints    | −.458***<br>(.141)           | −.454***<br>(.142)  | −.471***<br>(.155)  | −.604**<br>(.248)            | −.545**<br>(.253)  | −.534*<br>(.281)   |
| Vertical constrains       | .024<br>(.021)               | .027<br>(.022)      | .035<br>(.026)      | .003<br>(.022)               | .001<br>(.025)     | −.005<br>(.027)    |
| Horizontal × Vertical     | .224***<br>(.069)            | .220***<br>(.070)   | .225***<br>(.076)   | .294**<br>(.122)             | .268**<br>(.126)   | .256*<br>(.137)    |
| Investment share of GDP   | .267***<br>(.066)            | .310***<br>(.062)   | .376***<br>(.072)   | .235***<br>(.074)            | .268***<br>(.078)  | .324***<br>(.088)  |
| Infant mortality rate     | −.001***<br>(.0004)          | −.001***<br>(.0004) | −.001***<br>(.0004) | −.001<br>(.0005)             | −.001<br>(.0005)   | −.0005<br>(.0004)  |
| Human capital index       | .243***<br>(.069)            | .229***<br>(.063)   | .222***<br>(.065)   | .319***<br>(.093)            | .308***<br>(.090)  | .299***<br>(.086)  |
| Trade share of GDP        | .008<br>(.019)               | .008<br>(.019)      | .009<br>(.020)      | −.005<br>(.011)              | −.017<br>(.010)    | −.011<br>(.011)    |
| TFP in const. nat. prices | .160***<br>(.048)            | .146***<br>(.044)   | .138***<br>(.044)   | .143***<br>(.042)            | .136***<br>(.042)  | .129***<br>(.039)  |
| Tax revenue share of GDP  | .221**<br>(.091)             | .214**<br>(.088)    | .210**<br>(.085)    | .373***<br>(.136)            | .378***<br>(.128)  | .368***<br>(.118)  |
| Social unrest             | −.018**<br>(.008)            | −.024***<br>(.009)  | −.026***<br>(.010)  | −.017***<br>(.006)           | −.025***<br>(.006) | −.021***<br>(.006) |
| Log GDP, first lag        | .488***<br>(.081)            | .321***<br>(.088)   | .257***<br>(.086)   | .387***<br>(.076)            | .327***<br>(.082)  | .304***<br>(.082)  |
| Log GDP, second lag       | .277***<br>(.035)            | .188***<br>(.048)   | .118**<br>(.051)    | .242***<br>(.037)            | .157***<br>(.048)  | .147**<br>(.057)   |

|                              |                   |                   |       |                   |                   |
|------------------------------|-------------------|-------------------|-------|-------------------|-------------------|
| Log GDP, third lag           | .200***<br>(.058) | .166***<br>(.057) |       | .154***<br>(.055) | .166***<br>(.057) |
| Log GDP, fourth lag          | .071<br>(.059)    | .059<br>(.048)    |       | .036<br>(.060)    | .023<br>(.053)    |
| Log GDP, fifth lag           |                   | .110<br>(.083)    |       |                   | .049<br>(.075)    |
| Log GDP, sixth lag           |                   | .022<br>(.068)    |       |                   | .009<br>(.049)    |
| Log GDP, seventh lag         |                   | -.054<br>(.074)   |       |                   | -.084<br>(.074)   |
| Log GDP, eight lag           |                   | .111**<br>(.052)  |       |                   | .049<br>(.049)    |
| Hansen-Sargan Test (p-value) | 1                 | 1                 | 1     | 1                 | 1                 |
| Observations used            | 14391             | 13919             | 12775 | 7174              | 6888              |
| Countries in the sample      | 143               | 143               | 143   | 143               | 143               |

*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 the Blundell and Bond (1998) GMM estimator, and columns 4-6 for the Arellano and Bond (1991) GMM estimator. All specifications include a full set of country and year fixed effects as controls. Robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses. Columns 1 and 4 include two lags of the dependent variable, columns 2 and 5 include four, and columns 3 and 6 include eight lags as controls. The Hansen-Sargan test reports the validity of the instruments implemented in each specification ( $H_0$  = instruments are valid).

*Source:* The author.

**Table 11.** The effect of executive constraints on potential mechanisms

|                                   | Dependent variable     |                         |                      |                            |                          |                   |                       |                    |                    |                          |
|-----------------------------------|------------------------|-------------------------|----------------------|----------------------------|--------------------------|-------------------|-----------------------|--------------------|--------------------|--------------------------|
|                                   | Property rights<br>(1) | Physical capital<br>(2) | Human capital<br>(3) | Secondary education<br>(4) | Primary education<br>(5) | Corruption<br>(6) | Gov. stability<br>(7) | Tax revenue<br>(8) | TFP<br>(9)         | Infant mortality<br>(10) |
| Committed and accountable ruler   | −.074<br>(.092)        | .002<br>(.003)          | .018*<br>(.010)      | −.177<br>(.271)            | .728***<br>(.271)        | .122***<br>(.030) | −.117<br>(.119)       | .007***<br>(.003)  | −.023*<br>(.013)   | −.347***<br>(.668)       |
| Uncommitted but accountable ruler | −.225*<br>(.122)       | .002<br>(.005)          | .001<br>(.010)       | −.250<br>(.348)            | .411<br>(.313)           | .013<br>(.042)    | −.034<br>(.142)       | .005<br>(.004)     | −.065***<br>(.021) | −.672**<br>(.042)        |
| R <sup>2</sup>                    | .671                   | .279                    | .407                 | .889                       | .901                     | .715              | .483                  | .247               | .254               | .530                     |
| R <sup>2</sup> Adjusted           | .650                   | .256                    | .388                 | .881                       | .895                     | .697              | .451                  | .223               | .230               | .515                     |
| Observations                      | 2572                   | 6752                    | 6752                 | 2629                       | 3524                     | 2572              | 2572                  | 6752               | 6752               | 6752                     |
| Countries in the sample           | 121                    | 143                     | 143                  | 130                        | 135                      | 121               | 121                   | 143                | 143                | 143                      |

*Significance levels: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .*

**Nota.**— The table presents estimates of the effect of executive constraints on different channels. All specifications were controlled for a full set of country and year fixed effects, four lags of GDP per capita, and four lags of the dependent variable (this according to specifications used in Acemoglu et al. 2019). Robust standard errors against heteroscedasticity and serial autocorrelation are reported in parentheses.

## 6. Conclusions

Research that has studied the economic impact of political institutions has opted to aggregate them into broad categories such as democracy and dictatorship. These efforts have not yet been able to generate broad academic consensus on which type of regime produces better economic outcomes. Likewise, the approach used does not take into account the potential impact of institutional variations within these broad categories, nor the possible institutional settings that may be in place. For this reason, the main contribution of this research has been to design a novel approach that allows us to exploit the institutional variations and combinations that may arise in society to determine the effect of political institutions on economic performance.

Our descriptive analysis suggests that democratic institutions are associated with good economic performance. Henceforth, it was possible to observe a higher degree of economic development in political systems characterized as democratic (as defined by Boix, Miller, and Rosato 2012), with the presence of horizontal and/or vertical constraints (both according to different definitions and measures of Polity IV), and with committed and accountable rulers (according to the variable constructed for this research). Measures of different democratic institutions also suggest that these on average are associated with higher levels of wealth, lower infant mortality rates, higher levels of education in their populations, and greater capacity to carry out market reforms. In addition, moderate differences in favor of democratic institutions were observed for the protection of property rights, the human capital index, and the level of corruption. Finally, no significant differences were found in the level of productivity, government stability, investment in physical capital, trade, and tax revenue.

Formally, in order to estimate the effect of executive constraints on economic growth, some static and dynamic panel analyses were performed with different specifications. The results obtained indicate that there is a negative effect of the presence of horizontal constraints on the level of GDP per capita; vertical constraints have no significant effect; and there is a positive effect of the presence of both compared to their absence. Our preferred specification shows that the exclusive presence of horizontal constraints is associated with a decrease of about 0.21 percent in GDP per capita compared to the other country-year observations coded with the presence of other constraints and holding all else constant. In contrast, we found that the presence of both constraints is associated with an increase of about 0.18 percent of GDP per capita, compared to observations coded with the absence of both constraints and conditional on the controls included in the model. With the systematic MGM of Blundell and Bond (1998), an attempt was made to correct for potential biases produced by the inclusion of lags of the dependent variable as regressors. Their results suggest a negative effect of horizontal constraints of about 0.46 percent on the level of GDP per capita and a positive effect of the presence of both constraints of about 0.22 percent.

Table 12 summarizes the general assessments of the study, contrasting the hypotheses derived from the literature with the results of our empirical analysis. Contrary to what the literature suggests, the results obtained in this research argue that the only presence of horizontal constraints does not generate a positive impact on growth. This effect is a product of controlling the performance of

horizontal constraints by other determinants of growth, and the relative performance of other institutional settings. The study also found empirical evidence that supports our hypothesis that the presence of both constraints increases economic growth. In addition, the hypothesis that countries with only one EC grow at similar rates is rejected. The exclusive presence of VC produces no economic impact, while the exclusive presence of HC produces a negative one. Similarly, the analysis finds evidence against Barro's non-linear hypothesis that intermediate levels of democracy are associated with better economic outcomes. In this sense, the joint presence of both EC produces much better outcomes than the other possible combinations.

As for the indirect effect, we were able to identify significant correlations between our measures and different channels. Committed and accountable rulers seem to be associated with better results in the human capital index, higher primary schooling rates, lower levels of corruption (as a proxy for the rulers' capacity for predation), higher tax revenues, and lower infant mortality rates per 1000 births. On the other hand, the research suggests that there is no significant impact between the presence of both EC and the level of private property protection, physical capital accumulation, secondary education, and government stability (as a proxy for autonomous state).

On the other hand, settings with uncommitted but accountable rulers are associated with a lower level of property rights protection (90 percent confidence level), lower productivity, and lower infant mortality rate, all as a function of their opposite category, that is, codifications with committed but unaccountable rulers. These observations provide some empirical evidence that the exclusive presence of HC is associated with greater protection of private property. However, these results should be taken with caution due to the basic specification of the model and the significance level of the estimation.

Results can be summarized as follows. Empirical evidence was found that supports the existence of a synergistic interaction between both types of executive constraints. This means that the joint effect of both institutions is much greater than the sum of their parts. The analyses also suggest a positive (but not entirely conclusive) relationship between horizontal constraints and greater protection of private property. Neither institutional setting appears to be related to greater physical capital accumulation. However, the presence of both constraints has a positive effect on human capital accumulation, suggesting that the indirect effect of these institutions is produced through this channel compared to others. Finally, no evidence was found linking an institutional setting with higher levels of governmental stability (as a proxy for state autonomy) and levels of corruption (as a proxy for state predation).

**Table 12.** Contrasting the main research hypotheses

| Effects  | Hypothesis  | Contrast                              |
|----------|---|---------------------------------------|
| Direct   | H <sub>1</sub> = The presence of both executive constraints increases growth.   | Evidence in favor                     |
|          | H <sub>2</sub> = Countries with the exclusive presence of only one constraint grow at similar rates.                        | Evidence against                      |
|          | H <sub>3</sub> = The exclusive presence of only one constraint increases growth more than the presence and absence of both. | Evidence against                      |
| Indirect | <u>Property rights</u> : In favor of horizontal constraints.  | In favor (not conclusive)             |
|          | H <sub>5</sub> = <u>Physical capital</u> : In favor of horizontal constraints and absence of both.                          | Evidence against                      |
|          | H <sub>6</sub> = <u>Human capital</u> : In favor of vertical constraints.   | Against. Evidence in favor of both EC |
|          | H <sub>7</sub> = <u>State autonomy</u> : In favor of horizontal constraints and absence of both.                            | No conclusive evidence                |
|          | H <sub>8</sub> = <u>Predatory state</u> : In favor of both executive constraints.   | In favor (not conclusive)             |

*Source:* The author.

### Limitations and future research agenda

One of the most important limitations in this research has to do with the choices that were made to measure our concepts of HC and VC. Accordingly, we have taken and dichotomized the Polity IV concepts of “executive constraints” and “competitiveness of the executive selection.” These variables were used because their information covered a large part of the countries and years originally intended to be analyzed (same countries but between 1850 to 2010). However, the problem with the use of these variables is that they are highly related, to the point of causing multicollinearity problems when they are implemented in the model in their dichotomous version. Future research should work on the collection of primary information that will make it possible to construct better indicators of EC. A viable proposal is to disaggregate measurements that have at their core Dahl’s definition of Polyarchy. These measures use the two conditions of Polyarchy called contestation and participation. Both conditions are conceptually related to our definitions of HC and VC respectively. As a consequence, a methodological approach using these conditions separately could generate better results. Finally, as discussed, it is also necessary to generate measurements to empirically identify vertical accountability mechanisms.

Data availability was another important constraint, for which several methodological decisions were made. Our initial research attempted to explore the effect of EC on a sample covering 143 countries between 1850 and 2010. This would have allowed us to capture greater variation for our different types of rulers. However, due to the excessive amount of missing data, it was decided to reduce the period of years from 1950 to 2010. The amount of missing data was substantially reduced but was still a problem for the estimates. As a potential solution, we decided to impute the missing data using different methods depending on the type of variable. Thus, missing data for

categorical variables were imputed with classification and regression trees, and missing data for numerical variables with Bayesian linear regressions. Appendix 2 provides graphs reporting the fit between the actual values observed in the database and the values imputed with the implemented methods. For each variable, it appears that the imputed values fit the observed values very well. An important decision made in the statistical analysis was to replace the primary and secondary schooling rates with the human capital index. This was justified because the imputation methods did not produce data that matched those observed for these variables.

We implemented fixed effect and GMM estimates to isolate the effect of EC on growth. This could be achieved by controlling for factors such as other determinants of development, unobservable and time-invariant country characteristics, common global trends, and persistent dynamics of GDP per capita. However, this research cannot demonstrate that the variables used are empirically exogenous. There is a heated theoretical debate about the direction of the causal relationship between economic and political development. Hence, it has not been possible to rule out the idea that better economic performance helps a society to develop one or another type of institutional setting based on the interaction between EC. Future research should use identification strategies to find exogenous variations of key independent variables and determine valid causal effects. A proposal could be to implement an instrumental variables approach. However, the challenge would be finding an instrument that can explain the effect of two different political institutions (or the more difficult case of finding two instruments).

Finally, one of the most important contributions of this research is to provide empirical evidence that the sequence in which EC are introduced across societies matters for growth. Gjerlow et al. (2018) is a clear example of how our research can integrate and nurture future agendas. The authors examine whether the sequence of first developing effective state institutions and then introducing democratic ones promotes better economic outcomes. Their contribution questions the commonly accepted fact that societies that developed state capacities before introducing democracy have better economic outcomes than societies that had the opposite sequencing.

This research is an effort to study which aspects of political (and also democratic) institutions are conducive to economic success. EC have been shown to produce impacts that differ based on their possible interactions. This accounts for the fundamental importance of political institutions of limited government and their sequencing. The study also suggests that special attention should be paid to the impacts of institutional variations that arise in different types of political regimes. The sole introduction of a strong parliament into a political system is not a sufficient condition for improving the development prospects of society. The fact that a society develops relies on the interaction of different (for some authors inclusive) institutions that can reduce the arbitrary use and abuse of political power.



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## Appendix 1

### List of countries for the base specification (with their respective observed periods)

| East Asia and Pacific        | Europe and Central Asia    | Europe and Central Asia | Middle East and North Africa     | North America                        | South Asia              | Sub-Saharan Africa            |
|------------------------------|----------------------------|-------------------------|----------------------------------|--------------------------------------|-------------------------|-------------------------------|
| Australia (1950-2010)        | Albania (1950-2010)        | Argentina (1950-2010)   | Saudi Arabia (1950-2010)         | Canada (1950-2010)                   | Afghanistan (1950-2010) | Angola (1975-2010)            |
| Cambodia (1953-2010)         | Germany (1990-2010)        | Bolivia (1950-2010)     | Algeria (1962-2010)              | United States of America (1950-2010) | Bangladesh (1971-2010)  | Benin (1960-2010)             |
| China (1950-2010)            | Austria (1950-2010)        | Brazil (1950-2010)      | Bahrain (1971-2010)              |                                      | Bhutan (1950-2010)      | Botswana (1966-2010)          |
| North Korea (1950-2010)      | Belgium (1950-2010)        | Chile (1950-2010)       | Egypt (1950-2010)                |                                      | India (1950-2010)       | Burkina Faso (1960-2010)      |
| South Korea (1950-2010)      | Bulgaria (1950-2010)       | Colombia (1950-2010)    | United Arab Emirates (1971-2010) |                                      | Nepal (1950-2010)       | Burundi (1962-2010)           |
| Philippines (1950-2010)      | Czechoslovakia (1950-1992) | Costa Rica (1950-2010)  | Iraq (1950-2010)                 |                                      | Pakistan (1950-2010)    | Cabo Verde (1975-2010)        |
| Fiji (1970-2010)             | Cyprus (1960-2010)         | Cuba (1950-2010)        | Iran (1950-2010)                 |                                      | Sri Lanka (1950-2010)   | Cameroon (1960-2010)          |
| Indonesia (1950-2010)        | Denmark (1950-2010)        | Ecuador (1950-2010)     | Israel (1950-2010)               |                                      |                         | Chad (1960-2010)              |
| Solomon Islands (1978-2010)  | Spain (1950-2010)          | El Salvador (1950-2010) | Jordan (1950-2010)               |                                      |                         | Comoros (1975-2010)           |
| Japan (1950-2010)            | Finland (1950-2010)        | Guatemala (1950-2010)   | Kuwait (1961-2010)               |                                      |                         | Côte d'Ivoire (1960-2010)     |
| Laos (1954-2010)             | France (1950-2010)         | Guyana (1966-2010)      | Lebanon (1950-2010)              |                                      |                         | Ethiopia (1950-2010)          |
| Malaysia (1957-2010)         | Netherlands (1950-2010)    | Haiti (1950-2010)       | Libya (1951-2010)                |                                      |                         | Gabon (1960-2010)             |
| Mongolia (1950-2010)         | Hungary (1950-2010)        | Honduras (1950-2010)    | Morocco (1956-2010)              |                                      |                         | Gambia (1965-2010)            |
| Myanmar (1950-2010)          | Ireland (1950-2010)        | Jamaica (1962-2010)     | Oman (1950-2010)                 |                                      |                         | Ghana (1957-2010)             |
| New Zealand (1950-2010)      | Italy (1950-2010)          | Mexico (1950-2010)      | Qatar (1971-2010)                |                                      |                         | Guinea (1958-2010)            |
| Papua New Guinea (1975-2010) | Latvia (1991-2010)         | Nicaragua (1950-2010)   | Syria (1950-2010)                |                                      |                         | Equatorial Guinea (1968-2010) |
| Singapore (1965-2010)        | Lithuania (1991-2010)      | Panama (1950-2010)      | Tunisia (1956-2010)              |                                      |                         | Guinea-Bissau (1974-2010)     |
|                              | Luxembourg (1950-2010)     |                         |                                  |                                      |                         | Kenia (1963-2010)             |
|                              | Norway (1950-2010)         |                         |                                  |                                      |                         | Lesotho (1966-2010)           |
|                              | Poland (1950-2010)         |                         |                                  |                                      |                         | Liberia (1950-2010)           |
|                              |                            |                         |                                  |                                      |                         | Madagascar (1960-2010)        |
|                              |                            |                         |                                  |                                      |                         | Malawi (1964-2010)            |
|                              |                            |                         |                                  |                                      |                         | Mali (1960-2010)              |
|                              |                            |                         |                                  |                                      |                         | Mauritius (1968-2010)         |

|                         |                               |                                       |                         |   |
|-------------------------|-------------------------------|---------------------------------------|-------------------------|---|
| Thailand<br>(1950-2010) | Portugal<br>(1950-2010)       | Paraguay<br>(1950-2010)               | Djibouti<br>(1977-2010) | Mauritania<br>(1960-2010)                   |
| Taiwan<br>(1950-2010)   | United Kingdom<br>(1950-2010) | Peru (1950-2010)                      |                         | Mozambique<br>(1975-2010)                   |
| Vietnam<br>(1976-2010)  | Czech Republic<br>(1993-2010) | Dominican<br>Republic<br>(1950-2010)  |                         | Niger (1960-2010)                           |
|                         | Romania<br>(1950-2010)        | Suriname<br>(1975-2010)               |                         | Nigeria (1960-2010)                         |
|                         | Russia (1992-2010)            | Trinidad and<br>Tobago<br>(1962-2010) |                         | Central African<br>Republic (1960-2010)     |
|                         | Sweden (1950-2010)            | Uruguay<br>(1950-2010)                |                         | Republic of Congo<br>(1960-2010)            |
|                         | Switzerland<br>(1950-2010)    | Venezuela<br>(1950-2010)              |                         | Democratic Republic<br>of Congo (1960-2010) |
|                         | Turkey (1950-2010)            |                                       |                         | Rwanda (1962-2010)                          |
|                         |                               |                                       |                         | Senegal (1960-2010)                         |
|                         |                               |                                       |                         | Sierra Leone<br>(1961-2010)                 |
|                         |                               |                                       |                         | Somalia (1960-2010)                         |
|                         |                               |                                       |                         | Swaziland (1968-2010)                       |
|                         |                               |                                       |                         | South Africa<br>(1950-2010)                 |
|                         |                               |                                       |                         | Sudan (1956-2010)                           |
|                         |                               |                                       |                         | Tanzania (1961-2010)                        |
|                         |                               |                                       |                         | Togo (1960-2010)                            |
|                         |                               |                                       |                         | Uganda (1962-2010)                          |
|                         |                               |                                       |                         | Zambia (1964-2010)                          |
|                         |                               |                                       |                         | Zimbabwe (1980-2010)                        |

**Note.**— The sample covers a total of 143 countries observed between 1950 and 2010, with a total of 7603 country-year observations. The table describes all these countries listed according to the World Bank’s regional classification. The observed or available period for each case is provided in parentheses.

*Source:* The author.

## Appendix 2

Fit chart between observed values (red line) and imputed values (green line)

