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Working Papers / Documents de travail

The Wise, the Politician and the Strongman: National Leaders' Type and Quality of Governance

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WP 2021 - Nr 20 v2

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May 2022

Abstract

There is strong evidence that national leaders matter for the performance of their nations, but little is known about what drives the direction of their effects. I assess how national leaders' quality of governance, measured by six indicators, varies with their career and education. Using a sample of 1,000 rulers between 1931 and 2010, I identify three types of leaders: military leaders, academics, and politicians. I find that military leaders are associated with an overall negative performance, while politicians who have held important offices before taking power tend to perform well. Academics have on average non-significant effects. These results are partially driven by differences in policy decisions and in leadership styles. Military leaders (politicians) spend less (more) in health and education, are more (less) likely to establish a personalistic regime, to disrespect the constitution, and to move towards a non-electoral regime. Additionally, this paper highlights the weakness of using educational attainment as a proxy for politicians' quality, and of growth as a measure of national leaders' performance.

Key words: national leaders, politicians' quality, leaders' characteristics

JEL: H70, N10, J45

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1 Introduction

The debate on who should be at the head of a state goes back to at least the beginning of the Athenian democracy when most of the public offices were randomly selected by lottery. For Aristotle, it was a fair feature of democracy: everyone gets a say regardless of their background.[1] Among critics of this practice, Socrates pointed out the incompetence factor: "No one would choose a pilot or builder or flutist by lot, nor any other craftsman for work in which mistakes are far less disastrous than mistakes in statecraft" (Xenophon, Memorabilia Book I, 2.9). Individual backgrounds affect beliefs, skills, preferences, and degree of risk-aversion; features that are likely to be relevant to leaders' policy decisions and ultimately to the overall performance of the state they run.[2]

This paper uses economic tools and a worldwide sample of a thousand national leaders who were in office between 1931 and 2010 to assess whether some categories of national leaders perform better than others. I first estimate their effects on their quality of governance, measured by economic growth, democracy, corruption, rule of law, property rights, and conflict. I use a recent method proposed by Easterly and Pennings (2020) to isolate national leaders' effects from their countries and their regions' effects in a more precise way than by using fixed effects. In a second step, I analyze how those estimates vary according to the leaders' backgrounds. For this purpose, I identify three groups of leaders based on their academic track record and previous career: academics, politicians, and military leaders. Each of these contains two or more sub-categories allowing for a more granular analysis.

I find robust evidence that leaders' backgrounds are significantly correlated with their quality of governance. Leaders with a former military career tend to be associated with an overall negative effect. Conversely, politicians who have held important offices before becoming national leaders, such as former prime ministers or vice-presidents, are associated with improvements in national outcomes. Using an aggregated outcome, that goes from -4.3 to 3 and summarizes the six indicators used for performance, the effect of military leaders is around -0.6, while politicians have a nearly symmetric effect of 0.5.

I investigate two potential channels that can account for the previous findings. First, education, experience, and institutional quality might correlate with the constructed leaders' categories and be at play. I find that the positive effect associated with politicians is partially triggered by their longer experience in politics before entering office. When it comes to education, having a university degree in law, economics, or political science is not systematically associated with a positive or negative effect on the quality of governance. Together with the non-significant effect of academics, this weakens the support for the idea that more educated leaders are more desirable. Additionally,

[1] At least, everyone who was considered to be a citizen, which at the time excluded women, foreigners, children, slaves, and paupers. See Susemihl et al. (1894).

[2] See Horowitz and Stam (2014).

the overall negative performance of military rulers is explained, at least to some extent, by the lower constraints on the executive of the nations they run. Yet, constraints on leaders, education, and experience are not enough to explain the effects of leaders' backgrounds on national performance. Instead, I provide suggestive evidence that rulers with different backgrounds undertake different policy decisions and have different leadership styles. Military rulers (politicians) invest less (more) in education and health, are more (less) likely to switch to a non-electoral regime, to disrespect constitution, and to establish a regime based on personal authority, which pervades formal institutions. All those variables show in turn a strong correlation with the leaders' effects previously estimated. This second channel is consistent with life experiences affecting behaviors, which is a basic premise of sociology and psychology (Horowitz and Stam, 2014). More precisely, leaders' backgrounds shape preferences, skills, the assesment of costs and benefits of each action, leadership styles and policy decisions.

It is also relevant to consider how leaders' backgrounds interact with institutions. I find that the positive effect of politicians vanishes when initial institutional constraints are strong. This is in line with Ottinger and Voigtländer (2021) who find that leaders' abilities matter only under unconstrained regimes, and with Besley et al. (2011) who show that educated leaders improve growth only in autocracies. Constraints can also compensate for the negative effect of military leaders, compatibly with the idea that institutions can discipline politicians. Therefore, institutional constraints can avoid the negative effect of bad leaders but also hide the positive impact of good rulers. Nonetheless, the aforementioned differences in the extent to which they respect constitution, manipulate electoral regimes and impose authority based on personal patronage rather than on law or ideology suggest that leaders have room to evade institutional constraints. Altogether, both leaders' backgrounds and institutions matter for national outcomes, and they interact with each other.

One of the major threats to identification is the endogeneity in the timing of political transitions, implying that the probability of observing a leader in a certain country, at a certain time, depends on his current and past performance. To assess this issue, I follow Jones and Olken (2005), who focus on transitions where the leader died while in power by natural causes, considering these as unpredictable events and therefore independent of economic conditions. The results are robust with this sample restriction. Moreover, the methodology used in this paper provides estimators that have been shown to be accurate in the presence of endogeneity in transitions (Easterly and Pennings, 2020). A second concern is that leaders' backgrounds are endogenous to the initial quality of governance, in particular to the level of democracy. Indeed, it is more common to see former military staff in autocracies, where there are fewer academics, former mayors, governors, and civil servants. The results hold when controlling for the initial level of democracy and the initial property rights score. However, the last controls do not fully solve the endogeneity

in leaders' backgrounds. Besides, it is not possible to tackle endogeneity in timing together with endogeneity in leaders' backgrounds. Hence, the estimates presented in this paper cannot be fully interpreted as causal. They remain nonetheless informative and support the recent evidence that individual characteristics of politicians matter for aggregated outcomes. Finally, despite leaders' categories being data-driven, there is an unavoidable degree of arbitrariness when creating leaders' groups. I show the robustness of these choices by using a LASSO estimation to select under an unsupervised approach the best set of predictors among a large pool of leaders' characteristics.

This paper refers to the broad literature on the impact of individual leaders in shaping aggregated outcomes. From history to economics, the debate is polarized. Defenders of the Great Man theory such as Thomas Carlyle or Sidney Hook argue that history can be largely explained by decisions and actions impulsed by certain leaders.[3] Conversely, many philosophers consider historical events and leaders as determined by the society itself. In economics, we can find a resembling rift in the literature of the origins and persistence of the great divergence between the poorest and richest nations. Factors such as geography, culture, history, and institutions have been highlighted to a great extent. Besley (2005) instead points out that the major economic changes over the past two centuries can be attributed to individual political leaders. Beyond observational evidence, Jones and Olken (2005) provide causal evidence that national leaders shape the growth path of a country.

If national leaders matter, it is important to explore how their characteristics map to their effects. This paper mainly contributes to the literature that studies how national leaders' characteristics affect national outcomes. A closely related paper is the one by Besley et al. (2011), who tested whether the impact of leaders on their nation's economic growth varies according to their educational attainment, finding a positive association. Leaders with an economic background are also associated with higher growth rates in democracies (Brown, 2020) and with higher foreign direct investment in autocracies (François et al., 2020). National leaders' backgrounds also affect the implementation of market-liberalization reforms (Dreher et al., 2009), the level of democracy in developing countries (Mercier, 2016), corruption in Africa (Efobi, 2015) and militarized conflicts (Horowitz and Stam, 2014).

Closely related is the literature on politicians' quality and valence. While many theoretical models have disentangled "good" politicians from "bad" ones, it is empirically challenging to detect them and to measure their quality.[4] Certainly, the quality of leaders is unobserved and difficult to quantify. Thus, it is common to use the level of education or previous experience as a proxy for politicians' valence.[5] Moreover, candidates themselves

[3]See for instance Carlyle (1837, 1993); Hook (1943).

[4]For the theoretical literature see Besley (2006); Caselli and Morelli (2004); Coate and Morris (1995).

[5]See Ferraz and Finan (2009); Galasso and Nannicini (2011).

tend to strengthen their education or previous careers in political campaigns, suggesting that this would impact voters' perception of their abilities. Yet, as argued by Volden et al. (2020), the mapping between personal traits and subsequent politicians' performance is often opaque.[6] Some novel works measure politicians' ability by exploiting unusual data, such as Ottinger and Voigtländer (2021) who focus on monarchs' intellectual ability scores instrumented by their degree of breeding, or Dal Bó et al. (2017) who rely on politicians' IQ scores.

My empirical frame differs from previous works in three ways. First, I focus on multiple outcomes to measure national leaders' quality of governance in a broad sense.[7] Second, I use data-driven categories that allow me to exploit detailed information on national leaders' past experience and to reduce prior judgment on the selection of attributes that affect leaders' performance. Third, the cited studies use fixed effects or the average outcome to measure the ruler's impact. Here, I use the leaders' value-added estimators of Easterly and Pennings (2020), which better isolates rulers' effects from shocks and countries' effects, and detects significant leaders in relative terms both with respect to other rulers in their region at the same time and to leaders in the same country at different times.

With these new features, my results contribute to the existing literature by showing first that the positive effect of university education is positive for growth, consistent with Besley et al. (2011), but negative or non-significant on all other indicators, in line with Carnes and Lupu (2016). Leaders' effects on growth are uncorrelated with leaders' effects on all other outcomes. Together with the notices of Easterly and Pennings (2020) regarding the difficulty of using growth rate to identify leaders' effects given its noise and volatility, as well as the high variation across alternative data sources, this paper emphasizes that the most widely used proxies for national leaders' performance (growth) and leaders' quality (graduate education) have to be taken with precaution.[8] Second, I show that leaders' previous experience in politics, both in the type of office and the number of years of experience, is informative of a positive overall performance and rulers' military career is strongly associated with negative effects. Third, I provide suggestive evidence that leaders from different backgrounds choose different policies: politicians are associated with higher levels of social spending, and the reverse applies to military rulers. Fourth, I show that leaders' effects interact with institutions. I support previous

[6]Volden et al. (2020) also show that the role of education on effectiveness is not straightforward, as it depends on ideology and networks. Carnes and Lupu (2016) conclude that overall graduate leaders are non-different from others in terms of corruption, the number of bills that they pass, polls' performance, and do not have a positive effect in national outcomes.

[7]There are few exceptions: Papaioannou and Van Zanden (2015) use economic growth, inflation and two indexes for the quality of governance, Carnes and Lupu (2016) use GDP, inequality, protests, unemployment, inflation, and militarized disputes at the national level, and Ottinger and Voigtländer (2021) use as state performance a score provided by historian Woods that accounts for several dimensions.

[8]For the inconsistency of growth across data sources also see Johnson et al. (2013) and Ponomareva and Katayama (2010).

findings by Jones and Olken (2005), Besley et al. (2011), and Ottinger and Voigtländer (2021) that leaders' effects are stronger under unconstrained regimes, and I also show that leaders of different types differ on the extent to which they respect formal institutions. Altogether, these results contribute to the mapping between leaders' attributes and their performance.

The rest of this paper is organized as follows. Section 2 reviews the existing related literature. Section 3 describes the data and sources used in this work. Section 4 provides the estimations for leaders' effects. Section 5 analyzes how leaders' backgrounds affect the quality of governance. Section 6 presents the results of robustness checks, and Section 7 concludes.

2 Related literature

2.1 The broad debate

The long-term interest in political leaders is grounded in the belief that leaders shape historical outcomes. Proponents of this claim, known as the "Great Man" view, argue that history can be explained by the idiosyncratic influence of certain individuals such as Mahatma Gandhi, Kamal Atatürk, Abraham Lincoln, Vladimir Lenin, Joseph Stalin, Adolph Hitler, Mao Tse Tung, and Winston Churchill.[9] At the other extreme, opponents of this premise claim that historical events and leaders can be determined by the society itself.[10] In the middle-ground, Weber (1947) argues that "charismatic" leaders can have substantial effects, but only when bureaucracy or social norms do not interfere. For him, historical forces, institutions, and leaders all matter, and they interact in an important way.[11]

Acknowledging that political leadership matters opens the debate on who is better suited to run a nation. In ancient Greece, political officials were selected by *sortition*, that is, randomly among the whole pool of citizens. Aristotle saw this as the channel through which to achieve equality of law and political rights, as opposed to an election system that would lead to an oligarchical system where only a few would rule (Susemihl et al., 1894). The most striking limitation of the random allocation of political offices is the lack of qualifications for some individuals. *Epistocrats* would argue for discrimination based on knowledge. John Stuart Mill proposed a voting system where the number of votes of each individual would be based on their educational attainment and occupational background

[9]See for instance Carlyle (1837, 1993); Hook (1943).

[10]For instance, Spencer (1892) states: "You must admit that the genesis of a great man depends on the long series of complex influences which has produced the race in which he appears, and the social state into which that race has slowly grown. ... Before he can remake his society, his society must make him."

[11]See also Jones and Olken (2005) for a more detailed summary of this debate.

(Estlund, 2003). Yet, epistocracy is not likely to come after democracy. As stated by Weber, once universal suffrage has been granted, the backlash effect of taking it away would be too terrible (Runciman, 2018). It is, nonetheless, acceptable to promote such discrimination in the case of politicians rather than voters. For instance, if educational attainment is a measure of knowledge, this may be translated into the desire to have a national leader with a higher level of education and/or degrees in several fields. This vision of knowledge measured by the level of education is called *scholocracy* (Estlund, 2003).[12]

Criticisms of epistocracy come in many forms, one being demographic representation. The most educated group of a country may share some common demographic features in terms of gender, age and social class that make them unrepresentative of the entire society (Estlund, 2003). Nowadays, when educational attainment in the political elite is high, the core of the debate has been turned to which field of education is better suited for politicians. Supporters of *technocracy* would promote being governed by experts. But technocracy may not always be the best option. For instance, as argued by Runciman (2018): "Technocrats are the people who understand what's best for the machine. But keeping the machine running might be the worst thing we could do. Technocrats won't help with that question."

Besides education, previous political experience may give rulers a comparative advantage by acquiring specific skills, understanding the political arena, and making political connections. The type of people who are called to the profession of politics share some characteristics. Weber argued that politics may be a man's avocation or his vocation. While we are all "occasional" politicians, Weber defines "professional" politicians as those who live "for" and/or "off" politics. Rulers who have made a career in politics instead of having had other former occupations may have an inherent vocation and stronger motivations than others. Yet, Weber found vanity to be a common characteristic among politicians, meaning that politicians are tempted to make decisions based on emotional attachments to followers, and not on the rational reasoning needed to govern justly and effectively (Weber et al., 2004).

History is also marked by military leaders. Napoléon Bonaparte, John F. Kennedy, Nikita Khrushchev, and De Gaule are examples of the leaders who fought in armed conflicts before reaching power. Horowitz and Stam (2014) claim that former military experience might have a powerful and systematic effect on leaders' behavior. More broadly, the observation that life experiences shape an individual's behavior is a basic premise in psychology and sociology.

[12]It has been recently applied in some Indian states by setting minimum education requirements for contesting elections.

2.2 The economic literature

In the political economy literature, the interest in and evidence on the importance of political leaders' identity are more recent, as traditionally economic outcomes have been mostly attributed to geography, history, macroeconomic cycles, or institutions. Instead, Besley (2005) observes that every major episode of economic change over the past 200 years can be associated with a key political personality, conveying the Great Man theory to this field.[13]

Going beyond anecdotal evidence and providing causal evidence that national leaders shape economic outcomes has proved to be difficult, given the endogeneity in leaders' emergence, and the difficulty to disentangle between leaders' effects, contemporaneous shocks, and their constituencies' fixed-effects. Jones and Olken (2005) overcome those limitations by exploiting transitions in which the leader in power died by natural death while in office, considering those as unpredictable events, and therefore exogenous to the current politic-economic context. They find that national leaders matter to the extent of shaping the growth path of their country.

Consistent with the scholocracy argument, Besley et al. (2011) show that more educated leaders are associated with higher economic growth rates. In the spectrum of technocracy, Brown (2020) found that national leaders with a degree in economics are associated with higher rates of economic growth, and François et al. (2020) concluded that they also trigger higher levels of foreign investment. The economic performance of a nation is also affected negatively by national leaders' age (Jong-A-Pin and Mierau, 2011; Atella and Carbonari, 2017) and by their tenures in autocracies (Papaioannou and Van Zanden, 2015). More broadly, Dreher et al. (2009) studied how the profession and education of heads of government are important for implementing market-liberalizing reforms, Horowitz and Stam (2014) examined how national leaders' characteristics affect military decisions, Jha and Wilkinson (2012) document that exposure to war helps to develop organization skills and to take collective actions, and Dube and Harish (2020) show that, contrary to popular beliefs, female monarchs were more likely to undertake policies that lead to war than male ones. In developing countries, Mercier (2016) analyzed the effects of national leaders' migration experience on the level of democracy, and Efobi (2015) found that the attributes of African national leaders are significant in determining the level of corruption.

At the local level, there is a larger body of compelling evidence that links politicians' characteristics and their constituencies' outcomes, as it is easier to design an empirical strategy to identify a causal effect. Educated leaders have been associated to better

[13]As examples, Besley (2005) mentions Otto von Bismarck as the promoter of a welfare state in Germany, the role of Theodore Roosevelt in the economic reforms of the Progressive Era, Franklin Roosevelt's association to the New Deal; Mao's role in China's Great Leap; and Margaret Thatcher's economic legacy of privatization and deregulation attributed to her single-minded pursuit of these goals.

educational outcomes (Martinez-Bravo, 2017; Diaz-Serrano and Pérez, 2013), and public investment (Mitra, 2020). Leaders' gender has become an active research topic at the local level. Chattopadhyay and Duflo (2004) use data from India, where some council head positions were randomly allocated to women. They found that female leaders spend more on infrastructure that is directly relevant to the needs and complaints of women citizens. Brollo and Troiano (2016) used a discontinuity approach based on close elections and found that in Brazil, female mayors are less likely to engage in corruption, hire fewer temporary public employees during the electoral year and attract fewer campaign contributions when running for reelection. Profeta and Accettura (2022) also find gender-differences in political cycles by showing that in Italian municipalities female mayors engage in less strategic spending at pre-electoral and electoral years. In the same line, Alesina et al. (2015) show that strategic responses to electoral incentives also depend on politicians' age. The evidence on the role of individual characteristics in politics also extends to other political offices, such as central bankers (Göhlmann and Vaubel, 2007), finance ministers (Jochimsen and Thomasius, 2014; Moessinger, 2014) and legislators (Volden and Wiseman, 2018; Lippmann, 2022; Jain et al., 2022).

Steering away from political rulers, leaders have been proved to be relevant in the most diverse areas, going from firms to religion. For instance, Bertrand and Schoar (2003) and Bandiera et al. (2020) stress that differences in firms' performance depend on the specific characteristics of the firm's CEO, Dippel and Heblich (2021) shows how the "Forty-Eighters" influenced enlistment decisions in the US civil war, Wang (2021) finds that Father Charles Coughlin shaped votes preference, and Bassi and Rasul (2017) show that the Pope's persuasive messages had an effect on fertility.

Unsettled conclusions on three aspects are worth mentioning. Most of the cited studies focus on assessing the effect of one characteristic on one outcome. If diverse outcomes are uncorrelated or negatively correlated between them, a positive effect in one dimension does not allow us to conclude about the broad performance of leaders. Some exceptions are Papaioannou and Van Zanden (2015), Carnes and Lupu (2016) and Ottinger and Voigtländer (2021). Moreover, the use of fixed-effects models to measure leaders' effect can be problematic (see Section 4.1). This paper differs from previous work by using a multi-dimensional measure of leaders' performance and by estimating leaders' effects through a method inspired by the teacher-value added literature.

Similarly, politicians' quality is relatively easy to define and implement in theoretical models. For instance, Besley (2005) and Caselli and Morelli (2004) defined it according to honesty and competence.[14] Moving to the empirical analysis is difficult as quality is unobserved and we know little about how politicians' attributes map to abilities (Volden et al., 2020). In a novel attempt to measure quality, Ottinger and Voigtländer (2021) proxy monarchs' ability by historian Woods's intelligence scores instrumented by rulers'

[14]See also Besley (2006); Galasso and Nannicini (2011); Coate and Morris (1995).

degree of inbreeding and Dal Bó et al. (2017) rely on unusual data on politicians' IQ scores. Backed by the labor economics literature, some authors have used as a measure of quality the level of education and previous experience in politics (Ferraz and Finan, 2009; Galasso and Nannicini, 2011). However, there is mixed evidence on the effect that certain politicians' characteristics have, in particular the positive effect of formal education.[15] Carnes and Lupu (2016) conclude that graduate politicians do not run more prosperous nations, and at the local level they are no less likely to be corrupt, they do not do better at polls, and they do not pass more bills.[16] Lahoti and Sahoo (2020) find heterogenous effects of leaders' education on educational outcomes according to the state's level of development. Volden et al. (2020) show that the impact of education on legislators' effectiveness is not straightforward.[17] I reinforce this skepticism by showing that national leaders' education is positively correlated with growth, consistent with Besley (2005), but it has no effect on democracy, corruption, property rights, rule of law or conflict. Moreover, I show that leaders' previous experience in politics, with respect to both the type of office and the years of experience, is informative of a positive overall performance and that rulers' military career is strongly associated with negative effects.

Finally, the evidence of how rulers interact with institutions is limited in the leaders' literature.[18] Jones and Olken (2005), Besley et al. (2011), and Ottinger and Voigtländer (2021) underline that politicians matter less when institutions are stronger. I provide further evidence in favor of this finding, and I add to the literature by highlighting that leaders' respect to formal institutions varies with their background. Military leaders (politicians) are more (less) likely to infringe the constitution; to move towards a non-electoral system; and to establish a personalistic regime.

In sum, previous literature suggests that leaders from different backgrounds have different skills, preferences, leadership styles, and risk behaviors, which affect policy decisions and consequently the performance of the constituency that they run. Leaders' effects interact with institutional constraints, as those can prevent political leaders from implementing their preferred policy (Jones and Olken, 2005). Figure 1 presents this theoretical relationship, which is an adaptation from Horowitz and Stam (2014).[19]

[15] See also Selb and Munzert (2018) who question that charismatic leaders are relevant for the electoral success of populist parties suggested by Eatwell (2000); Kitschelt and McGann (1997); Mény and Surel (2002), among others.

[16] Their empirical strategy at the national level rely on a fixed-effects model with an indicator for countries that have experienced random transitions (defined as in Jones and Olken (2005); Besley et al. (2011)) in the last five years and that had college-educated leaders and an indicator for countries that have experienced these transitions and that had leaders without college degrees.

[17] Jain et al. (2022) find a positive effect of legislators' education on economic development, but they find other traits such as gender, or criminality to have a greater effect.

[18] Instead, the political science literature has largely studied the ability of "veto players" (such as constitutions, or opposing political parties) to constrain politicians (Jones and Olken, 2005). See for instance Tsebelis (2011).

[19] The original representation by Horowitz and Stam (2014) is Figure E1 from Appendix E.

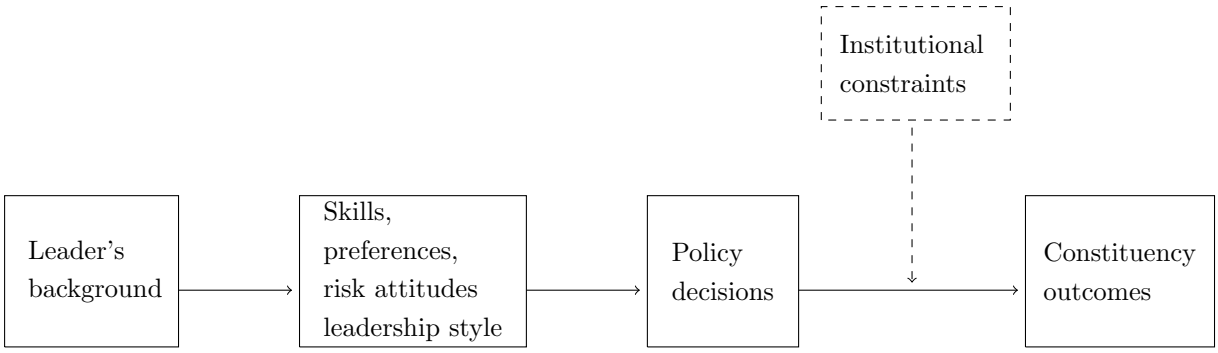


Figure 1: Theoretical relationship between leader's backgrounds and policy outcomes

3 Data

3.1 Leaders' data

This paper uses the Cursus Honorum database (Baturo, 2016) as the primary data source for national leaders' characteristics and the Leader Experience and Attribute Descriptions (Ellis et al., 2015) as a supplementary source. Both build on Goemans et al. (2009) which identify the *effective* leaders of each independent state: those who *de facto* exercise power. In most cases, the effective leader corresponds to the president in presidential systems, the prime minister in parliamentary systems, and the dictator in autocracies. There are few exceptions, such as the case of Rafael Trujillo in the Dominican Republic, who did not formally occupy the presidency between 16 August 1938 and 18 May 1942, but remained the de facto ruler of the country (Goemans et al., 2009). Another example is the brief presidency of Cámpora in Argentina in 1973 who ran under the shadow of Perón, as his campaign slogan explicitly claimed: "Cámpora to the government, Perón to power."[20]

I use data from 1931 to 2010 from 148 countries and I focus on leaders who stayed three or more years in power.[21] This gives a total of 1,002 national leaders that are distributed all across the world as illustrated by Figure 2.[22] Table 1 displays descriptive statistics. The median national leader stays in office for 6 years and is a graduate 53 years-old man counting with 11 years of experience in formal politics.[23]

To define leaders' background, I rely on the detail of their previous career and their academic field, provided by the Cursus Honorum database (Baturo, 2016). First, I analyze the most frequent leaders' careers and degrees by restricting the analysis to those occupations and educational fields with more than 30 repetitions in the sample. I list

[20]The original slogan is "Cámpora al gobierno, Perón al poder".

[21]Thus, I do not include 691 leaders who stayed two or fewer years in power and 87 who stayed three or more, but for whom I do not have sufficient data to estimate leaders' effects in the next section.

[22]In Section 5 I further restrict the sample to those leaders without missing information for their background and the outcome analyzed. Descriptive statistics of these sub-samples are provided in Table A3 of Appendix A.

[23]Since men represent a high percentage (97%) of the dataset, it is not possible to assess the effect of gender in the present work.

those in Table 2. Second, I consider the interdependence among and across careers and degrees. Figure 3 depicts the associated correlations. The thicker the line that links two words, the higher the correlation coefficient between them. On the top left, there is a triangle of correlations: leaders with a law degree are likely to have been members of parliament and/or party leaders, and many party leaders also served as members of parliaments. On the bottom, we can identify a cluster of words related to leaders with a military background, such as military career, military education, commander, chief, army and officer. A high proportion of these leaders are unlikely to have a university degree. Finally, the last cluster at the right relates to academics, either with an economic background or a humanity degree. Economist rulers are also likely to have served previously as finance ministers.

The previous analysis suggests that (i) controlling separately for academic degrees and occupation is likely to lead to bias the results, (ii) there are some occupations (degrees) which are not systematically associated with a specific academic degree (occupation), those are the words listed in Table 2 and which do not appear in Figure 3, and (iii) some careers, particularly the ones related to the legislative arena (senators, legislators, members of parliament) involve similar responsibilities but are named differently in different countries.

Taking all these points into account, I create three main groups of leaders, each one with two or more sub-categories. The first encompasses **military leaders**, either because (i) they had a career in the military force or (ii) a military education. Then, there are the **academic leaders**. Within this group, we can distinguish between economists and other academics. Finally, the third group is composed of **politicians**: which includes (i)

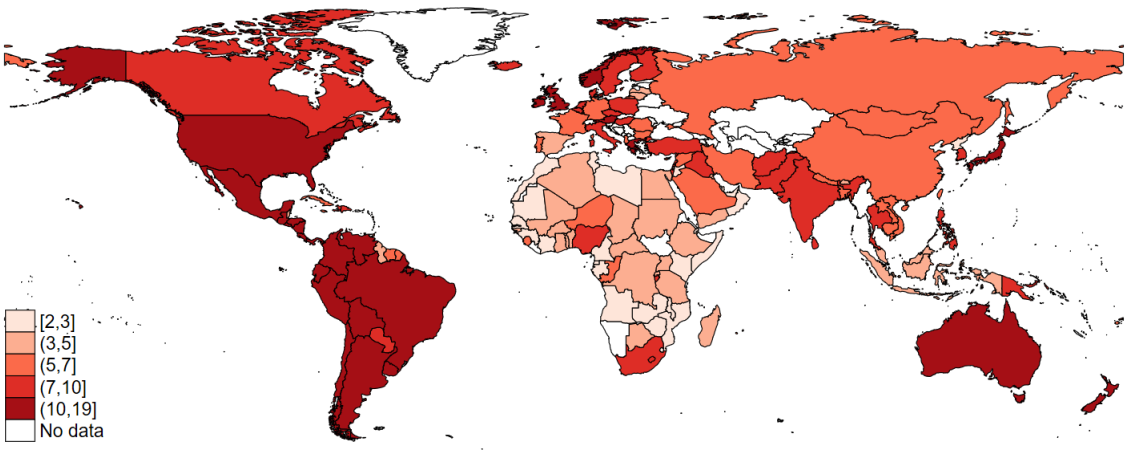


Figure 2: Number of national leaders per country

The map shows the distribution of national leaders who stayed in power three or more years from 1931 to 2010 and for whom I have data on at least one of the following macroeconomic variables: economic growth, corruption, democracy, property right score, rule of law and/or conflict. There is a total of 148 countries in the sample.

General statistics			
Number of leaders	1,002		
Mean age	52.3 years-old [s.d: 10.8]	Median age	53 years-old
Mean tenure	8.5 years [s.d: 7.4]	Median tenure	6 years
Men	824 leaders (97%)		
Leaders with substantial constraints	462 leaders (54.93%)		
Leaders with a university degree	783 (78.14%)		
Experience			
Mean years of experience in formal politics (CH)	12 years [s.d: 10.3]	Median years of experience in formal politics	11 years
Mean years of experience in general politics (CH)	15.6 years [s.d: 11.3]	Median years of experience in general politics	15 years
Mean years of experience in politics (LEAD)	15.03 years [s.d: 12.2]	Median years of experience in general politics	14 years

Leaders' categories	
Number of leaders with career information	858
Military leaders	**280**
Military career	240
Military education	215
Academics	**107**
Economist	38
Other academic	69
Politicians	**604**
Legislative career	121
PM, VP or president	214
Party leader	183
Minister	164
Mayor or governor	51
Civil servant/diplomat	59

Table 1: Leaders' characteristics

National leaders' sample is restricted to those with tenure equal or longer than 3 years who were in power from 1931 to 2010 and for whom I have data on at least one of the following variables: economic growth, corruption, democracy, property right score and/or rule of law. Data is taken from Baturo (2016) and Ellis et al. (2015). Standard deviations are reported in brackets. Years in formal politics (from Baturo (2016)) account for years in official politics, such as being a member of parliament, governor or city mayor, among others, while the general indicator additionally accounts for any political activity such as party membership or civil service offices. Leaders with substantial constraints are those from whom the Polity IV Executive Constraints is higher or equal than 4 the year before the leader enters office. The criteria used to build the background categories is detailed in Appendix A.

politicians with a legal background such as former members of parliament, senators and legislators; (ii) mayors and governors; (iii) prime ministers, vice-presidents and presidents; (iv) party leaders, (v) ministers and (vi) civil servants or diplomats. The number of leaders in each category is displayed in Table 1. The frequency between sub-categories as well as further details of the criteria used to construct each category are found in Appendix A.

Even though previous categories are data-driven, and I use the sub-categories throughout this paper, allowing for a more granular analysis, there is an unavoidable degree of arbitrariness in categories' aggregation. In Section 6.3, I show the robustness of the results when using a LASSO regression to select among a large pool of covariates (which includes a larger number of occupations, degrees, experience, constraints on the executive,

as well as all relevant interaction among these variables) the best sub-set of covariates that better predict leaders' effects.

3.2 Quality of governance

Economic growth has been the primary indicator of national leaders' effects in the economic literature.[24] However, it is difficult to properly estimate leaders' effects on economic growth, given the high volatility in growth data and its inconsistency when using alternative sources.[25] Moreover, growth is only one aspect when evaluating a leader's performance, as high growth rates may not always be desirable if they come at the cost of adverse environmental effects, or if it do not lead to a more equal society. In this regard, Alvaredo et al. (2018) show that the global top 1 % earners has captured twice as much total growth than the bottom half of the distribution between 1980 and 2016. Therefore, I use several other indicators of the quality of governance linked to national performance justified below.

Following Mercier (2016), Papaioannou and Van Zanden (2015) and Marx et al. (2022), I include in the analysis the Polity IV score as a measure of democracy. I add corruption and rule of law, as those are considered two dimensions of governance by

[24]See Jones and Olken (2005); Besley et al. (2011); Brown (2020); Jong-A-Pin and Mierau (2011); Atella and Carbonari (2017).

[25]See Easterly and Pennings (2020); Johnson et al. (2013); Ponomareva and Katayama (2010).

Word	Repetition
Law	242
Ungraduate	219
Party leader	172
Minister	165
Prime minister	99
Military education	99
Member of the Parliament	93
Economics degree	88
Humanities degree	72
Military (in career description)	69
Engineering	49
Chief	49
Pre-independence leader	48
Army	46
Science	39
Academic	38
Finance	36
President	35
Vice president	32
Commander	31

Table 2: Word repetition in leaders' background variable

The table shows the words with more than 30 repetitions in the leaders' background variable for the leaders included in the sample. The leaders' background variable is the concatenation of a variable that describes the leader's career prior to taking office and the one that describes his/her university field(s), taken from Baturo (2016) dataset. I grouped the following words into single expressions: "member of the parliament", "economics degree", "humanities degree", "political science", "party leader", "no education", "pre-independence leader", "military career", "military education" and "civil servant". Ungraduate refers to "no education" in Baturo (2016). There is a total of 188 distinct expressions in the background variable.

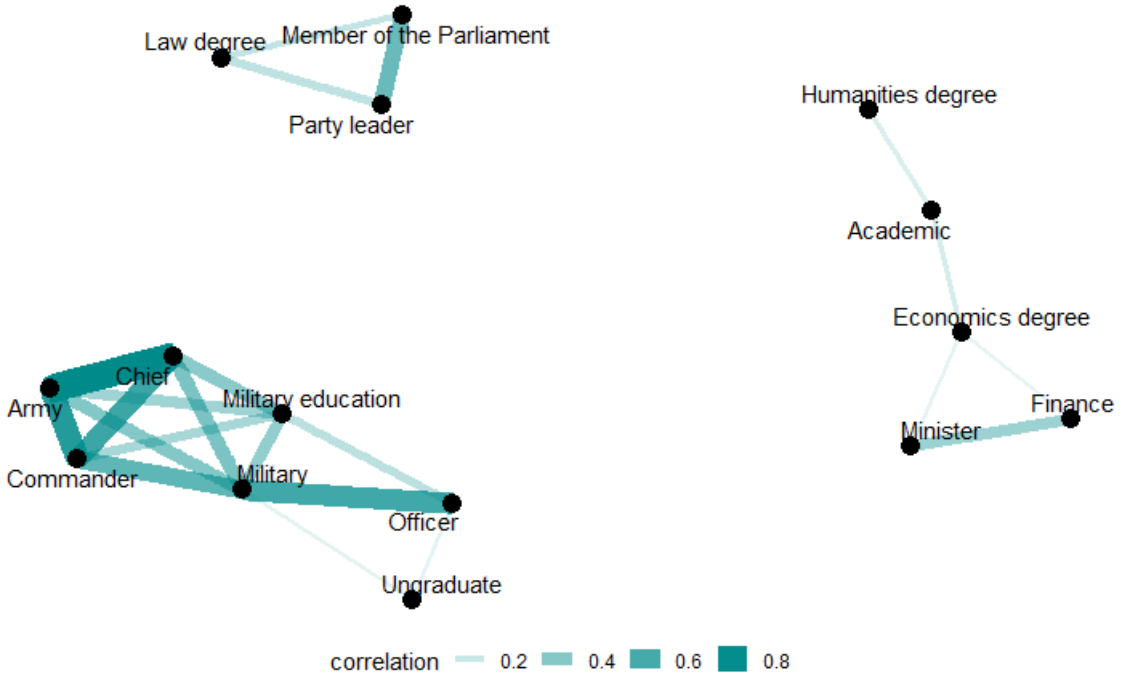


Figure 3: Words' network in the leaders' background variable

The figure shows the correlation of words in the leaders' background variable, which is the concatenation of a variable that describes the leader's career prior to taking office and the one that describes his/her university field(s), taken from Baturo (2016) dataset. I restrict to words with a correlation coefficient higher than 0.10 and to words repeated more than 30 times in the dataset. I grouped the following words into single expressions: "member of the parliament", "economics degree", "party leader", "law degree", "commander in chief", "military education" and "humanities degree". Humanities degree refers to a degree in philosophy, theology, sociology or psychology.

Kaufmann et al. (2011).[26] As Marx et al. (2022) and Dube and Harish (2020), I consider conflict in the analysis of national performance. Finally, I include property rights as it relates to economic development (Besley and Ghatak, 2010) but it does not suffer from the volatility or noise observed for growth.

Individually, each of these variables may not properly capture the quality of governance. For instance, some of them, such as corruption, rule of law and property rights, are perception-based and may not truly reflect what the variable aims to measure. Rodrik (2004) argued that investors' ratings of the rule of law may capture how well the rules regarding property rights are perceived to operate, rather than what those rules are. However, he also argued that performance is superior when the score is higher, even though the results do not allow us to determine what makes investors feel that way. Similarly, Glaeser et al. (2004) claimed that the Polity variables are highly volatile and do not reflect durable institutions, but the political choices made by the leader. This latter point is an advantage when focusing on leaders' effects. Further, there is still a unidi-

[26] A corruption index is also included in the ICRG indicator of Quality of Government (Teorell et al. (2018) based on ICRG (2017)) together with "Bureaucracy Quality" and "Law and Order" which relates to rule of law. Efobi (2015) has also studied national leaders' effects on corruption.

rectional relationship between the variable and the evaluation of a leader's performance. Taken together, if most of the outcomes improve and the remainder does not worsen, it is reasonable to claim that there is an increase in the quality of governance. To measure global performance, I use two synthetic indexes that combine leaders' effects in all the 6 selected variables.

Another potential concern is the extent to which individual leaders can affect the chosen indicators. Anecdotal and empirical evidence supports that leaders influence the previous outcomes. Jones and Olken (2005) argue that national leaders shape economic growth, particularly through monetary policies, while Besley et al. (2011) and Brown (2020) show that leaders' effect on growth varies with education. The role of national leaders in initiating conflict has been pointed out by Horowitz and Stam (2014), and Dube and Harish (2020) study the role of gender in militarized disputes. Besley and Ghatak (2010) give examples of how thorough expropriations, governments, and specifically some national leaders shaped property rights.[27] When it comes to democracy, while regime turnovers are often triggered by social movements and revolutions rather than by a sole national leader, the definition of the new system and the new institutions (such as implementing a new constitution) are within the national leader's reach. Moreover, Mercier (2016) shows that national leaders' migration experience is associated with changes in democracy and Marx et al. (2022) also use it as an indicator for national performance. Concerning corruption, I restrict to the level of corruption on the executive, which by construction is likely to depend on the individual with the most executive power (whom I refer to as the national leader). Following the definition provided in Table A4, this index can be affected by favors in exchange for bribes, kickbacks, or other material inducements, and by how often leaders steal, embezzle, or misappropriate public funds. To further address this concern, in Section 4.2.1 I give real-life examples of the means through which national leaders included in this paper shaped, for the best and for the worst, each of the considered outcomes; in Section 5.2 I explore heterogeneity among leaders depending on whether or not they are subject to strong constraints, which may affect the extent to which leaders can shape outcomes; and in Section 6.3 I show correlations between the indicator of overall performance used in this paper with external indexes of quality of governance.

Data for economic and social outputs used in the present paper is drawn from the Maddison Project (Bolt et al., 2018), the Polity IV Project (Marshall and Gurr, 2018) and the V-Dem (Varieties of Democracy) dataset (Coppedge et al., 2019). Each variable definition, as well as its source, can be found in Appendix A.

[27]Some examples are the expropriation of the Knights Templar by Philip IV of France in 1307; the dissolution of monasteries by Henry VIII in England in 1536; the expropriation by President Cardenas of Mexico of petroleum assets in the 1930s; and more recently the Zimbabwean program of forceful land redistribution since 2000.

4 Measuring leaders' effects

4.1 Methodology

Identifying the effects of political leaders at the national level is a hard task, due to endogeneity issues, the availability of data to perform cross-country comparisons and noise in the data. Recently, Easterly and Pennings (2020) proposed a new methodology inspired by the teacher value-added literature to estimate the growth contribution of every individual head of state since 1950. They started with a simple model in which growth, under leader i's term in country c in year t, follows:

$$g^*_{ict} = \lambda_i + \mu_c + \epsilon_{ict} \tag{1}$$

where g^*_{ict} is the mean-zero residual of g_{ict} after removing region×year fixed effects in a first regression; $\lambda_i \sim N(0, \sigma^2_i)$ is the leader's effect on growth, which is fixed over all of their tenure; $\mu_c \sim N(0, \sigma^2_c)$ is the country effect, which captures the growth trend that is due to time-invariant variables at the country level beyond the leader's control, such as institutions, culture and geography; and $\epsilon_{ict} \sim N(0, \sigma^2_{\epsilon c})$ is the random noise of growth with a country specific variance.[28]

The goal of Easterly and Pennings (2020) was to propose a good estimator of λ_i. The first intuitive alternative is to use leaders' fixed effects, which is simply the average growth under leader i's tenure. However, using Monte Carlo simulations, they found that this estimator performs very poorly, as the root mean squared error of the estimator is very large.[29],[30]

They proposed instead a least-squares leader estimator (λ^{LS}_i) given by equation (2).

$$\hat{\lambda}^{LS}_i = \psi_i(\overline{g}_i - \gamma_i \overline{g}_{-ic}) \tag{2}$$

where γ_i intuitively reflects how $\overline{g}_{-ic}$, the average growth under other leaders from the same country, is a good measure of the country effect, and similarly ψ_i, the shrinkage factor, measures how the adjusted leader output average reflects the true leader effect. If ψ_i is low, this means that the adjusted average will be a poor measure of the leader's effect, which is the case when year-to-year growth is very noisy; the leader has a short

[28]The six regions are: 1) Europe, the United States, Canada, Australia and New Zealand; 2) Communist Bloc countries close to the Soviet Union (Albania, Bulgaria, Hungary, Mongolia, Poland and Romania); 3) Sub-Saharan Africa; 4) the Middle East and North Africa; 5) Latin America and the Caribbean; 6) Asia.

[29]Easterly and Pennings (2020) show that the root squared error of this estimator for economic growth is more than twice as large as when assuming $\hat{\lambda}_i = 0$.

[30]The error of this naive estimator is $\frac{1}{T_i}\sum_{t=1}^{T_i} \epsilon_{ict} + \mu_c$, where T_i is the total tenure of leader i. The first term of the sum is the country fixed effect, which could be removed in a first regression, as done with region×year dummies, but by doing so, we would also be removing part of each leader's effect, especially the ones with long tenure. Even if controlling for μ_c, the estimator would perform poorly as empirically the most important part of the error is ϵ_{ict}.

tenure or country effects vary greatly, making it difficult to distinguish between country and leader effects.

Easterly and Pennings (2020) concluded by estimating confidence intervals at the 95% confidence level for leaders' effects. Using this methodology, a leader will be significant for a certain outcome if the change in this outcome during their tenure is significantly higher than that of other leaders in the same region at the same time and than that of other rulers from the same country in different years. I also condition significance on the nominal variation in the outcome being different from zero, meaning that the significance does not come only from the relative difference with other heads of government but also from a fluctuation in the outcome during the leader's term. A more detailed review of the methodology and the formulas used to calculate γ_i and ψ_i are presented in Appendix B.

4.2 Estimating leaders' effects

I estimate the effects of national leaders on six outcomes: growth, democracy, corruption, rule of law, property rights and conflict. Table 3 shows, for each of the outcomes considered, the estimated country and leader variance (σ_c and σ_λ, respectively) as well as γ_i and ψ_i, defined above. It also shows the number of significant leaders who have stayed in power for three or more years. For corruption and conflict I multiply leaders' effects by -1, so leaders with a positive effect are the ones associated with lower corruption and lower conflict.[31]

Easterly and Pennings (2020) found that only 6% of national leaders in their sample had a significant impact on economic growth. I find the same proportion for growth in my sample of national leaders, as shown by column 1 in Table 3. As Easterly and Pennings (2020) explained, this is not necessarily because most rulers do not shape growth, but because the noise in the growth data makes it difficult to identify their effects. It could also be because growth is endogenous to political cycles.[32] Further, the sample of significant leaders is not robust when changing the data source for growth. When using alternative indicators for leaders' performance, a greater proportion of leaders becomes significant. It may seem counter-intuitive, given that these variables are much less volatile than growth rates. Indeed, it is precisely because they are more likely to change across leaders' terms, rather than within, that these variations are easily attributed to political leaders rather than to common regional shocks or luck. Thus, contrary to growth where variations are common from one year to another within a ruler's term, it becomes easier to identify the

[31] As in Easterly and Pennings (2020), I exclude countries with less than 30 years of observations and years for which the absolute value of economic growth was greater than 40%. To simplify, I do not estimate country and leaders' variance depending on the level of democracy, but results remain robust if doing so.

[32] See for instance Cukierman et al. (1992).

leaders' effects.

4.2.1 Rankings

Obtaining these leaders' effects allows us to rank national leaders according to their performance in each area. In Appendix C, I provide the rankings of the best and worse fifty heads of government for each variable studied. Below, I discuss some examples.

The ranking of leaders' contributions on growth (Table C1) is led by Leopold Figl from Austria being appointed as Chancellor in the first free elections since 1930, in the aftermaths of World War II. Austria showed a greater recovery than its neighbor nations, partially explained by its higher financial help from the USA's Marshall Plan. He is followed in the ranking by Franklin Roosevelt, who was elected for four consecutive terms. At the time he won the first election, the U.S. was undergoing at the worst depression in its history. He responded with the New Deal program which rapidly boosted the economy. It is also worth noting that his last years were marked by World War II, and the US is coded in the same region as Europe for computing leaders' effects. Thus, part of his place in the ranking may be explained by the heavier economic costs in European countries. As it is noticeable, those two leaders were in office in times of a deep deterioration of the economic situation, where there is arguable more room for economic reforms. The third national leader in growth contributions is Seretse Khama, the first President of Botswana, who stayed in office from 1966 to 1980. In 1966, Botswana was the world's third poorest country. Once in office, Khama, unlike other African leaders, adopted market-friendly policies such as low and stable taxes, liberalized trade, increased personal freedoms and he fought against corruption. He set out on an economic program intended to transform

	(1) **Growth**	(2) **Democracy**	(3) **Corruption**	(4) **Rule of law**	(5) **Property rights**	(6) **Conflict**
σ_ϵ	3.961 [1.614]	0.083 [0.045]	0.029 [0.019]	0.040 [0.029]	0.037 [0.027]	0.197 [0.106]
σ_c	0.005	0.157	0.190	0.185	0.170	0.187
σ_λ	0.014	0.186	0.135	0.134	0.153	0.149
ψ_i (shrinkage coefficient)	0.445 [0.187]	0.856 [0.150]	0.891 [0.073]	0.880 [0.074]	0.892 [0.067]	0.687 [0.158]
γ_i	0.387 [0.156]	0.807 [0.193]	0.939 [0.057]	0.937 [0.059]	0.909 [0.078]	0.902 [0.076]
Number of countries	131	147	144	143	144	139
Number of leaders	889	1000	987	981	989	919
Number of significant leaders	57 (6.4%)	181 (18.1%)	219 (22.2%)	297 (30.3%)	126 (12.7%)	68 (7.4%)
Number of leaders with significant and positive effect	37 (4.2%)	78 (7.8%)	108 (10.9%)	156 (15.9%)	59 (6.0%)	31 (3.4%)
Number of leaders with significant and negative effect	20 (2.2%)	103 (10.3%)	111 (11.2%)	141 (14.4%)	67 (6.8%)	68 (4.0%)

Table 3: Variance components and coefficients for leaders' effects estimation

σ_ϵ, σ_c and σ_λ are the estimates of the error, the country and the leader variance components respectively. ψ refers to the shrinkage coefficient and γ to the country effect's weight from equation (4). The detailed formulas for each component can be found in Appendix B. Leaders' effects are estimated for those with tenure equal to or longer than 3 years. I exclude countries with less than 30 observations and in the first column those observations where the absolute value for growth was greater than 40%.

the nation into an export-based economy, which was fostered by the discovery of Orapa's diamond deposits in 1967 (Haskins, 2005; Tupy, 2008).

When it comes to property rights, the ranking is led by two Mongolian leaders: Bagabandi and Enkhbayar. During this period, the government implemented free-market reforms, among which there was an ambitious plan for the privatization of Mongolia's largest state enterprises. The IMF also recognized Bagabandi for improving Mongolia's overall economic situation, by increasing revenues and better controlling government finances (Finch, 2002). Fidel Castro, who banned property sales when he came to power in 1959, is the worst of this ranking.

On the list of the most corrupt leaders, Hugo Chavez from Venezuela is first. According to the national Parliament, he made the country a paradise for corruption (Table C2).[33] He is closely followed by Rajapaksa, head of state of Sri Lanka.[34] Rajapaksa was charged with corruption involving the illegal transfer of state-owned weapons after his time in office. He also faced accusations of human rights abuses and his son and his brother were arrested for money laundering.[35]. Leaders at the bottom of the corruption ranking also appear to be at the bottom of rule of law. Chavez is indeed the worst effective ruler in both indicators; Pinochet is classed as the 4^{th} most corrupt and also 3^{rd} in negative effects on rule of law; Franco is 5^{th} and 6^{th} in the respective rankings; and Fujimori from Peru occupied the 6^{th} and 5^{th} bottom positions. Rajapaksa is moreover listed in the negative ranks of leaders' effects on property rights and rule of law.

When it comes to democracy, it is not surprising that most of them followed or preceded regimes changes (Table C3). Jawara (in 1^{st} position) was the first president of Gambia who already dominated the pre-independence political life and instituted a new constitution, Mara (in 2^{nd}) position served as Chief Minister from 1967 to 1970 when Fiji gained its independence from the United Kingdom, and afterwards as head of state in 1987, while Balewa (in 3^{rd} position) was the first Prime Minister of Nigeria after its independence. Among the worst leaders are renowned dictators such as Marcelo Caetano from Portugal (who lead a costly war against Portuguese colonies' independence), Schuschnigg (Hitler's Austrian ally), Franco, Mussolini, Pinochet, among others.

Similarly, leaders who have the worse effects on conflict lead to violent periods. The worst in the conflict ranking is Tojo, Prime Minister of Japan during World War II, known as the man who ordered Pearl Harbor. He was afterwards arrested, convicted, and sentenced to death for his war crimes, crimes against humanity and peace. He is followed by Macias Nguema, who despite being formally the first president of Equatorial Guinea, he is remembered as one of the most brutal dictators in history. He established a

[33]See https://www.efe.com/efe/america/politica/el-chavismo-hizo-de-venezuela-un-paraiso-para-la-corrupcion-segun-parlamento/20000035-3826238

[34]He was president from 2005 to 2015, although the estimated leaders' effects are computed until 2010.

[35]See https://www.bbc.com/news/world-asia-37234654

	LS_{Growth}	$LS_{Democracy}$	$LS_{Corruption}$	$LS_{Rule\ of\ law}$	$LS_{Property\ rights}$	$LS_{Conflict}$
LS_{Growth}	1.000					
$LS_{Democracy}$	0.063	1.000				
$LS_{Corruption}$	0.023	0.265	1.000			
$LS_{Rule\ of\ law}$	0.048	0.561	0.744	1.000		
$LS_{Property\ rights}$	0.063	0.259	0.072	0.349	1.000	
$LS_{Conflict}$	0.148	0.017	0.061	0.112	0.119	1.000

Table 4: Correlation coefficients between leaders' effects

This table presents the correlation coefficients between leaders' effects estimated using Easterly and Pennings (2020) methodology.

cult of personality, declared himself president for life and the "Grand Master of Science, Education and Culture". He was a bloody dictator. He launched a purge against intellectuals, killed or exiled nearly all the educated people in the country and banned the use of the word "intellectual". Macias also ordered to kill Nigerian immigrants workers, political preindependence leaders, political opponents, and priests.[36] On the opposite, the most peaceful head of state is Ariel Sharon, an influential and controversial Israelian figure. Indeed, before entering office he was a soldier and an officer in the Palestinian war. However, in the 2001 electoral campaign, he reinvented himself as a peace-seeker. When he entered office, he recognized Palestinians the right to establish their state, engaged in dialogue with Palestinian leaders, and ordered Israelian settlers to withdraw from the Gaza strip.[37]

In most of the above examples leaders' effects on multiple outcomes tend to go in the same direction. This is confirmed in Table 4 where I show that correlations of leaders' effects in different outcomes are all positive. It is interesting to notice that the correlation between leaders' effects on growth with the alternative outcomes are relatively low, reinforcing the importance of not judging a political leader by merely relying on economic indicators.

Overall, the reading of the rankings suggests that leaders who matter more, for the best or for the worse, were at the head of important economic or political reforms and led to drastic changes in society. Thus, individual politicians have the power to shape each of the outcomes considered through economic and social reforms, war or peace declarations, acts of corruption, among others.

4.2.2 Aggregated indexes

Assessing leaders' effects on multiple outcomes raises the issue of multiple testing. Therefore, besides using leaders' effects on the above-mentioned outcomes, I aggregate leaders'

[36]See https://web.archive.org/web/20141104035212/http://www.afroarticles.com/article-dashboard/Article/Macias-Nguema–Ruthless-and-bloody-dictator/117291 or https://en.wikipedia.org/wiki/Francisco_Macías_Nguema

[37]See https://www.theguardian.com/world/2014/jan/11/ariel-sharon-israel-warrior-death.

effects on the different dimensions to reduce the risk of over-rejection of the null hypothesis and to gain statistical power, similarly to Kling et al. (2007) and Marx et al. (2022). To do so, I first standardize leaders' effects in order to all of them have a mean of 0 and a standard deviation of 1. Then, I build two indexes: an unweighted sum of leaders' effects in all six outcomes and a linear combination of the outcomes in such a way that we retain most of the information. The last is obtained through a principal component analysis (see Appendix F).[38]

5 Leaders' backgrounds and the quality of governance

5.1 Benchmark results

In this section, I analyze how leaders' effects previously estimated vary according to national leaders' backgrounds. To do so, I estimate the following equation:

$$LS_{yi} = \alpha + \beta \mathbf{X_i} + \epsilon \tag{3}$$

where LS_{yi} is leader i's effect on outcome y as estimated in the previous section, $\mathbf{X}$ is a vector of leaders' characteristics, which includes age of entry, tenure and background categories discussed in Section 3 and detailed in Appendix A. To take into account the two-stage procedure, I estimate equation 3 using a weighted least square (WLS) where the weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation.[39] By doing so, coefficients that are more (less) precisely estimated in the first stage will have a higher (lower) weight. Results do not hinge on weighting, as estimations using OLS with bootstrapped standard errors yield similar results (see Section 6.1). Standard errors are clustered at the country level.

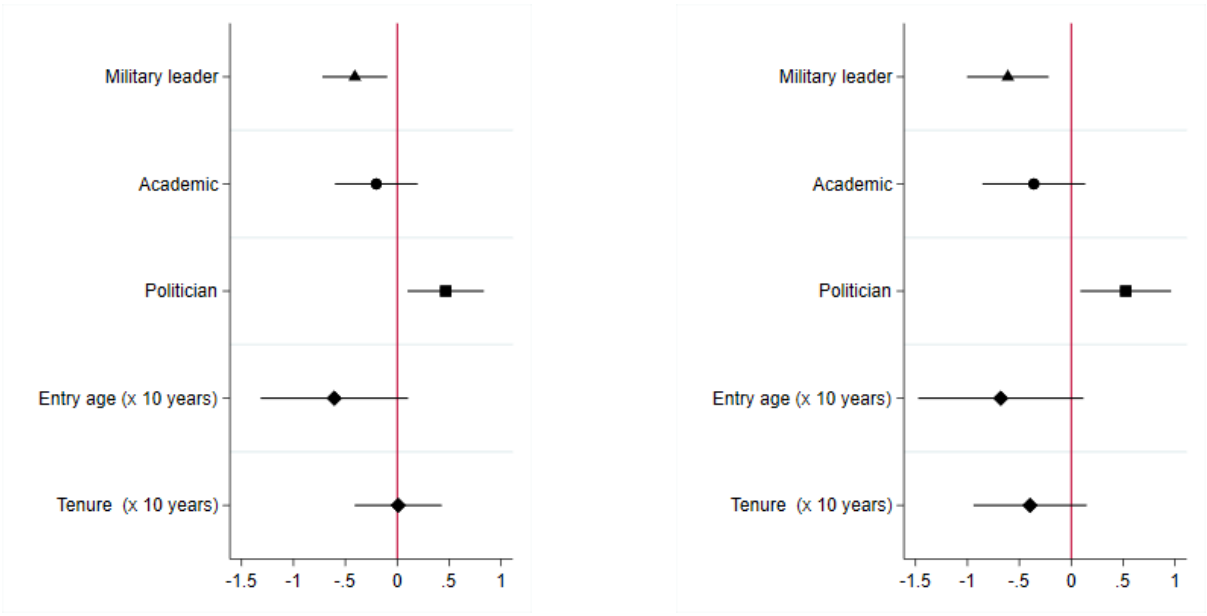
Panel A of Figure 4 shows the effects of leaders' broad categories on the two aggregated indexes. Military leaders are associated with a negative effect on the overall performance of their nation, while a positive one is attributed to politicians. On the other hand, academics do not have a significant impact. Panel B reiterates the analysis for subcategories, bringing into light that leaders with a military career trigger the negative effect of military leaders, while politicians who perform better are former prime ministers, vice-presidents or presidents.

Table D1 and D2 of Appendix D show the effects of leaders' backgrounds for each outcome that encompasses the aggregated indexes. Reassuringly, previous results are not

[38]The aggregated indexes are estimated for the restricted sample of leaders without missing values in any of the components.

[39]See Appendix B for the estimation of the posterior standard deviation.

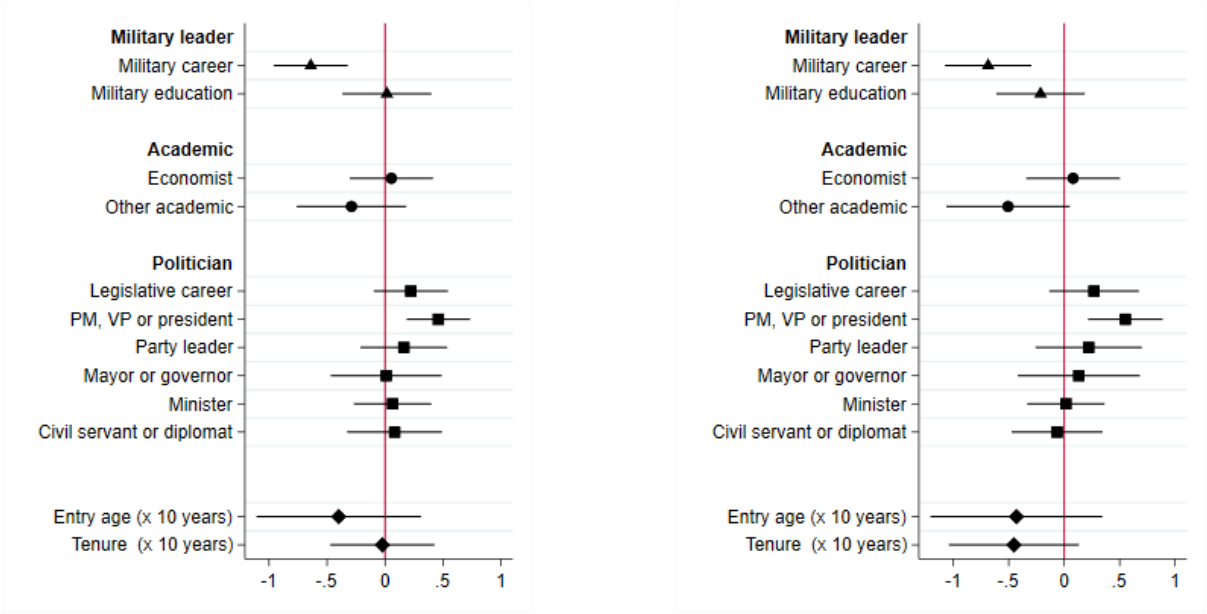
Panel A: Main categories



(a) Additive index

(b) PCA index

Panel B: Sub-categories



(a) Additive index

(b) PCA index

Figure 4: Leaders' performance and leaders' background.

The graphs plot the coefficient for each leaders' category on two aggregated indexes of the estimated leaders' effects obtained in Section 4. Those are post-estimations of weighted least-squares estimations where the weights are the ratio between the absolute value of the leader effect and the posterior standard deviation. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level. In each regression, I control for all categories together, tenure, entry age and the square of these two variables. The criteria used to build the background categories are detailed in Appendix A. I restrict the sample to leaders with tenure equal to or longer than three years, and to those where there is no missing value in any of the leader's effects. Each regression contains 693 leaders from 123 different countries. The coefficients and standard errors for the aggregated index as well as for each individual outcome are displayed in Table D1 for the main categories and in Table D2 for sub-categories.

driven by one specific variable. Military leaders have a negative effect in four out of six outcomes, even though they are associated with a positive (although insignificant) effect on growth and conflict. Politicians have a beneficial effect on five out of six outcomes, three of them being statistically significant from zero. Moreover, academics other than economists are associated with negative effects in corruption, rule of law, and conflict (see Table D2). However, the low precision of these estimates, as well as their positive coefficients regarding economic outcomes (growth and property rights) lead to a non-significant effect on the overall performance as measured by the aggregated index. Similarly, tenure and entry age have negative but non-significant effects on overall performance. Yet, the longer in office the leaders are, the more likely they are to be corrupt. This is consistent with the positive association between political longevity and corruption documented in the literature.[40] Leaders' age also negatively correlates with corruption and with rule of law.[41,42]

5.2 Mechanisms

The above-documented effects can be triggered by (i) differences in observables and context-specific characteristics correlated with the constructed leaders' categories, and (ii) leaders with different backgrounds undertaking different policy choices, as they have different leadership styles, preferences and objectives. These two set of channels are explored below.

5.2.1 Education, experience and institutions

In this section, I test three potential explanations to account for the positive effect of politicians and the negative one associated with military rulers. First, politicians may be more likely to come from an academic field that provides relevant knowledge for policy-making, such as a degree in law, political science or economics, and the negative effect of military leaders can be due to their lower educational attainment. Second, previous experience in politics may give politicians an advantage through *learning-by-doing* skills. Third, the effects can be driven by institutions, as military leaders (politicians) may be more likely to take power in those nations where institutions' quality is low (high).

To test these hypotheses, I begin by estimating equation 3 with a new vector $\mathbf{X}$ that includes leaders' educational outcomes (I control for having a degree in law, economics and political science, for having a military education, and for other graduate degrees),

[40] See for instance Besley and Prat (2006); Coviello and Gagliarducci (2017); Tsur (2022).

[41] These results are also in line with (Jong-A-Pin and Mierau, 2011; Atella and Carbonari, 2017) who show that national leaders' age affects negatively the economic performance of a nation and with (Papaioannou and Van Zanden, 2015) who find that years in office negatively correlate with economic development.

[42] Table D3 displays the estimates with interactions between sub-categories.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Degree in law	0.375	-0.209	-0.364	-0.168	0.496***	0.161	0.045	-0.097
	(0.300)	(0.187)	(0.301)	(0.291)	(0.172)	(0.335)	(0.193)	(0.247)
Degree in economics	-0.113	-0.159	0.242	0.405	-0.011	0.663*	0.257	0.264
	(0.454)	(0.194)	(0.362)	(0.287)	(0.362)	(0.340)	(0.239)	(0.243)
Degree in pol. science	-0.505	-0.071	-0.782*	-0.286	0.367	0.452	-0.087	-0.275
	(0.364)	(0.248)	(0.436)	(0.270)	(0.415)	(0.543)	(0.276)	(0.279)
Other degree	-0.057	0.034	-0.110	0.013	0.671**	-0.119	0.035	-0.023
	(0.348)	(0.218)	(0.372)	(0.294)	(0.274)	(0.449)	(0.214)	(0.255)
Military education	0.488	-0.532***	-0.475	-0.362	0.340	1.134**	-0.077	-0.460
	(0.298)	(0.179)	(0.379)	(0.327)	(0.297)	(0.510)	(0.245)	(0.282)
Years of experience	0.044**	0.017	0.067**	0.057*	0.000	0.097***	0.053***	0.052*
	(0.021)	(0.019)	(0.030)	(0.032)	(0.015)	(0.034)	(0.020)	(0.027)
Years of experience^2	-0.001	-0.000	-0.001*	-0.001	-0.000	-0.003**	-0.001**	-0.001
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Constraint	-0.219	1.252***	0.116	0.810**	0.625**	0.271	0.638***	0.773***
	(0.236)	(0.244)	(0.274)	(0.354)	(0.296)	(0.259)	(0.240)	(0.291)
Tenure (x 10 years)	0.023	0.057	-1.178**	-0.504	0.663**	0.351	-0.035	-0.317
	(0.381)	(0.220)	(0.464)	(0.451)	(0.306)	(0.456)	(0.313)	(0.377)
Tenure^2	-0.008	-0.086	0.216*	0.086	-0.261***	0.011	-0.053	-0.005
	(0.089)	(0.052)	(0.121)	(0.112)	(0.073)	(0.112)	(0.074)	(0.093)
Entry age (x 10 years)	0.160	0.106	-1.607***	-1.057	-0.172	-1.185	-0.697	-0.727
	(0.489)	(0.389)	(0.594)	(0.715)	(0.436)	(0.925)	(0.456)	(0.559)
Entry age^2	0.003	-0.015	0.144**	0.085	0.025	0.130	0.069	0.060
	(0.052)	(0.039)	(0.059)	(0.071)	(0.043)	(0.091)	(0.043)	(0.055)
Observations	626	652	659	673	665	631	585	585
Adjusted R-squared	0.057	0.416	0.143	0.243	0.222	0.098	0.193	0.281

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5: Education, constraints or experience?

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. Definition of independent variables are detailed in Appendix A. Other degree equals one if university degree is coded one, and economic, law, political science and military education is coded 0. Years of experience is taken from Baturo (2016) and includes years in formal politics that accounts for years in official politics, such as being a member of parliament, governor or city mayor, among others, and political activity such as party membership or civil service offices. Constraint equals one if the Polity IV Executive Constraints is higher or equal than 4 the year before the leader enters office. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

previous years of experience in politics (from the Baturo (2016) dataset), a dummy that equals one if there are substantial constraints on the executive, tenure and entry age.[43]

Table 5 suggests that the positive effect of politicians on the overall performance does not come from the level of education or leaders' academic specialization. This is an important result as empirical works on politicians' valence often use educational attainment as a proxy for politicians' quality.[44] More importantly, laws settling minimum educational attainment to run for political offices are becoming increasingly popular in India, and could potentially be followed by other developing countries. Yet, it is interesting to notice that when controlling only for graduate education in Table D4 the coefficient associated with it is positively significant for growth; positive but non-significant for the

[43]See Appendix A for the detailed definition of each variable.

[44]See for instance Galasso and Nannicini (2011); Ferraz and Finan (2009).

other economic indicator (property rights), and negative for the remaining outcomes.[45] For the PCA indicator that summarizes the overall performance, the negative coefficient is at the borderline of statistical significance at conventional levels (p= 0.106). This strengthens the warning of using growth as an indicator of the overall performance and educational attainment as a proxy for leaders' quality.

In contrast, former years of experience in politics are associated with a positive effect on all outcomes. Together with the positive effect of politicians who have held important offices (prime ministers, vice-presidents, or former presidents), it suggests that *learning-by-doing* skills can foster good performance.[46] Institutions also matter as constraints on the executive are correlated with strong and positive effects. This last result is consistent with constraints disciplining national leaders.[47]

Next, I explore heterogeneity effects by interacting the level of education, experience, and constraints with leaders' backgrounds. Table 6 shows the results for the additive index and Table D7 for the PCA index.[48] When accounting either for educational variables and/or for experience in politics, being a politician is no longer significant. This suggests that their positive effect is triggered by their field of specialization and their experience. Among politicians, only graduate ones have a positive effect on the additive index, but they represent a large majority of 84% among this category. A more precise distinction is made in Figure E2 that creates exclusive dummies for each leader's sub-categories depending on whether or not they are graduates. Once controlling for leaders' backgrounds, education does not alter leaders' effects within each sub-category.

Regarding previous years of experience in politics, it also mitigates the negative effect of military leaders and academics. This is confirmed in Figure 5 which plots the marginal effects of years of experience on the overall performance by leaders' background. Panel A uses the additive index and shows that military (academic) leaders with more than 7 (3) previous years of experience in formal politics have a neutral effect, instead of a negative one. Symmetrically, the positive effect of politicians is only significant for those with more than 7 years of experience. Panel B rises similar results when using the PCA indicator.

Once controlling for the initial constraints on the executive in column (3) of Table 5, the negative effect of military leaders on the overall performance is heavily reduced

[45]This result is consistent with Carnes and Lupu (2016) who show that graduate politicians do not perform better than non-graduate ones.

[46]As discussed in Appendix A, counting years of experience in politics is subject to a certain degree of subjectivity. I use as an alternative variable in Table D5, a more restricted one that only includes official politics, excluding years of civil service, revolutionary movements, and party membership. The positive effect of experience is robust.

[47]In Table D6, I regress experience and constraints with respect to previous leaders' categories. Experience is positively associated merely with politicians and the absence of substantial constraints on the executive with military leaders.

[48]I exclude those interactions with less than 30 observations, such as the interaction between academics and constraints.

	(1) Education	(2) Experience	(3) Constraints	(4) All
Military leader	-0.582**	-1.046***	-0.034	-0.937**
	(0.248)	(0.321)	(0.188)	(0.453)
Academic	-0.141	-0.330	-0.136	-0.667
	(0.239)	(0.433)	(0.218)	(0.419)
Politician	0.076	0.087	0.467*	-0.327
	(0.276)	(0.335)	(0.240)	(0.424)
Graduate	-0.739**			-0.834***
	(0.303)			(0.306)
Military leader*Graduate	0.247			0.417
	(0.363)			(0.357)
Politician*Graduate	0.546*			0.577*
	(0.300)			(0.333)
Years of exper.		-0.046		-0.062
		(0.039)		(0.041)
Years of exper.^{2}		0.002		0.002*
		(0.001)		(0.001)
Military leader*Years of exper.		0.072**		0.078*
		(0.034)		(0.041)
Military leader**Years of exper.^{2}		-0.001		-0.001
		(0.001)		(0.001)
Academic*Years of exper.		0.043		0.086*
		(0.052)		(0.051)
Academic*Years of exper.^{2}		-0.001		-0.002*
		(0.001)		(0.001)
Politician*Years of exper.		0.065		0.084*
		(0.040)		(0.045)
Politician*Years of exper.^{2}		-0.002*		-0.003**
		(0.001)		(0.001)
Constraint			0.793*	1.308***
			(0.463)	(0.375)
Military leader*Constraints			-0.377	-0.455
			(0.492)	(0.597)
Politician*Constraints			-0.247	-0.794**
			(0.448)	(0.340)
Tenure (x 10 years)	-0.084	-0.010	-0.109	-0.189
	(0.247)	(0.273)	(0.298)	(0.312)
Tenure^2	-0.055	-0.066	-0.042	-0.019
	(0.061)	(0.069)	(0.070)	(0.070)
Entry age (x 10 years)	-0.490	-0.564	-0.583	-0.613
	(0.422)	(0.461)	(0.429)	(0.457)
Entry age^2	0.049	0.052	0.057	0.060
	(0.040)	(0.044)	(0.039)	(0.043)
Observations	693	637	635	585
Adjusted R-squared	0.122	0.167	0.150	0.232
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1				

Table 6: Heterogenous effects using the additive index.

WLS estimators. The dependent variable is the additive index which is an unweighted sum of the standardized leaders' effects on all the outcomes estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A.Years of experience is taken from Baturo (2016) and includes years in formal politics that accounts for years in official politics, and political activity such as party membership or civil service offices. Standard errors are clustered at the country level.

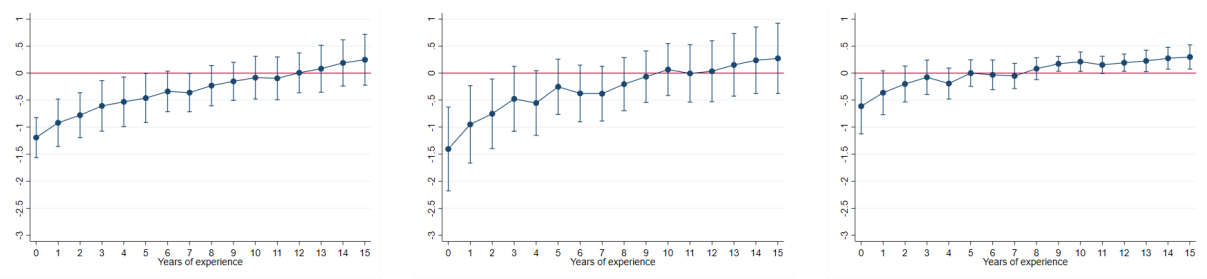
and no longer significant.[49] However, in the most complete specification (column (4)) that combines education, experience and constraints, as well as their interactions with backgrounds, military leaders are associated with strong negative effects, and graduate

[49]Initial constraints is defined with a dummy that equals one if the Polity IV Executive Constraints is higher or equal than 4 the year before the leader enters office.

politicians with a positive coefficient. It is also remarkable that institutional constraints shrink the positive effect of politicians, as suggested by the negative coefficient of the interaction between politicians and constraints. This is in line with Ottinger and Voigtländer (2021) and Besley et al. (2011) who found that leaders' abilities or education matter only when rulers are not under constraints. Altogether, bad leaders with no constraints may be undisciplined and act in their own interest, but good leaders subordinated to institutions may not be able to shape outcomes. Therefore, constraints can avoid the negative effect of bad leaders but also hide the positive effect of good rulers as they don't have room to shape outcomes.

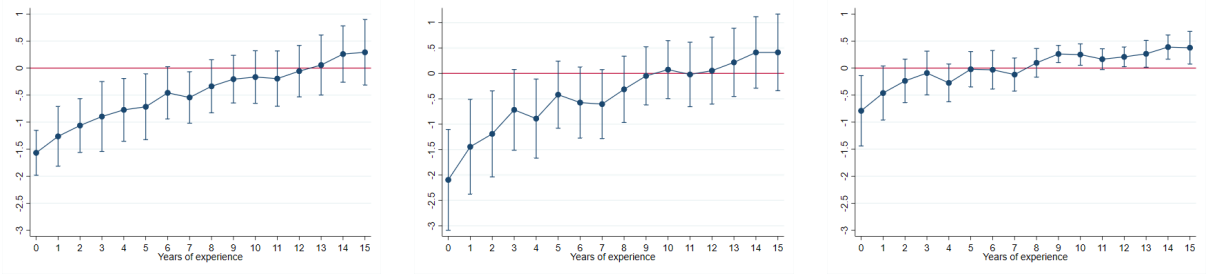
For the same level of experience, educational attainment, and constraints, leaders of distinct types have different effects, suggesting that these variables might explain only partially the differential of leaders' performance across categories.

Panel A: Additive index



(a) Military leader (b) Academic (c) Politician

Panel B: PCA index



(a) Military leader (b) Academic (c) Politician

Figure 5: Marginal effects of years of experience in politics on overall performance by leaders' background.

Marginal effects of year of experience in the additive index (Panel A) and the PCA index (Panel B). The first is an unweighted sum of the standardized leaders' effects on all the outcomes estimated in Section 4. The PCA (Principal Component Analysis) index which is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). The marginal effects are post estimation of the regression displayed in columns (2) from Table 6 and Table D7. Years of experience is taken from Baturo (2016) and includes years in formal politics that accounts for years in official politics, and political activity such as party membership or civil service offices. Standard errors are clustered at the country level.

5.2.2 Policy choices and leadership styles

As illustrated in Figure 1, rulers' backgrounds affect preferences, risk attitudes and leadership styles, which in turn affect policy decisions and ultimately national outcomes. I test those channels by studying whether the leaders' categories previously constructed are correlated with three proxies of ruling styles and with five measures of policy choices. To capture leadership styles, I rely on (i) an index that measures leaders' respect for the constitution, (ii) leaders' effects on the probability that the chief executive is selected through elections, and (iii) a neopatrimonial rule index, which assesses the extent to which rule is based on personal authority.[50] I estimate rulers' effects on those three outcomes using the methodology detailed in Section 4.1.

To study policy choices, I focus on the level of (i) total government expenditure, (ii) tax revenue, (iii) expenditure in education, (iv) expenditure in health, and (v) military expenses (all measured in percentage points of the GDP).[51, 52] Except for total government expenditure, the estimation of leaders' effects on outcomes (ii)-(v) cannot be done with Easterly and Pennings (2020) method given the limited number of observations, and the restriction of excluding countries with 30 or fewer observations. Hence, I focus on the average level of these variables during a leader's term.

From the estimates displayed in Table 7, it appears that military leaders (politicians) are more (less) likely to move towards a non-electoral regime, they are associated with a significantly lower (higher) level of respect for constitution, and with a higher (lower) score of neopatrimonialism. Regarding public finances, military rulers are associated with lower levels of total expenditure, education and health expenditure, and with higher levels of military expenditure. On the contrary, politicians are associated with higher levels of taxes, expenditure in health and in education. Academics have significantly lower levels of education expenditure, and higher scores of neopatrimonialism, but are neutral for the remaining outcomes.

Figure 6 links the previous variables and the estimated leaders' effects to the overall performance analyzed in the previous section. Leaders associated with a switch towards an electoral regime, and/or with a higher levels of respect for the constitution tend to perform better, while the reverse holds for leaders with a higher score of neopatrimonialism. The total level of taxes or expenditures are not significant for predicting the overall leaders' performance. However, the composition of the budget is relevant. The average expenditure in education and health positively correlates with both aggregated indexes.

[50] Clapham (1985) define a neopatrimonialism regime the one where the chief executive maintains authority through personal patronage, rather than through ideology or law, pervading formal institutions. See Appendix A for a detailed definition and sources of the three indexes.

[51] The analysis of leaders' effects on policy choices is limited by data availability for cross-country comparisons over a long period of time. The last three expenditure categories are the only ones available in the World Bank (2016) dataset.

[52] For the source and definition of those variables see Appendix A.

	(1) Electoral regime	(2) Respect for constitution	(3) Neopatri-monialism	(4) Government expenditure	(5) Tax revenue	(6) Education exp.	(7) Military exp.	(8) Health exp.
Military leader	-0.480*	-0.749***	0.633**	-0.441**	-0.202	-0.434***	0.204*	-0.357***
	(0.259)	(0.272)	(0.250)	(0.212)	(0.124)	(0.109)	(0.121)	(0.116)
Politician	0.613**	0.701**	-0.550**	0.258	0.323***	0.277**	-0.144	0.250*
	(0.259)	(0.306)	(0.263)	(0.218)	(0.122)	(0.113)	(0.127)	(0.129)
Academic	0.095	-0.365	0.524*	-0.274	-0.088	-0.201*	-0.088	0.038
	(0.220)	(0.297)	(0.297)	(0.206)	(0.114)	(0.121)	(0.100)	(0.129)
Tenure (x 10y)	0.889***	0.087	0.549*	0.295	0.070	-0.090	0.067	-0.306
	(0.306)	(0.330)	(0.324)	(0.443)	(0.207)	(0.228)	(0.195)	(0.203)
Tenure ^{2}	-0.222***	-0.056	-0.021	0.012	0.047	0.037	0.043	0.005
	(0.078)	(0.085)	(0.090)	(0.126)	(0.057)	(0.066)	(0.051)	(0.055)
Entry age (x 10y)	-0.400	-0.084	0.780*	-0.095	0.334	-0.040	-0.252	-0.630**
	(0.655)	(0.510)	(0.464)	(0.601)	(0.266)	(0.326)	(0.336)	(0.309)
Entry age ^{2}	0.043	0.007	-0.063	0.012	-0.024	0.000	0.032	0.046
	(0.058)	(0.048)	(0.043)	(0.052)	(0.026)	(0.031)	(0.035)	(0.028)
Constant	0.016	-0.019	-2.620**	-0.061	0.594	2.044**	1.357	4.580***
	(1.852)	(1.490)	(1.279)	(1.643)	(0.670)	(0.852)	(0.840)	(0.850)
Observations	847	849	849	722	496	508	677	369
Adjusted R-squared	0.107	0.171	0.179	0.044	0.045	0.050	0.052	0.079

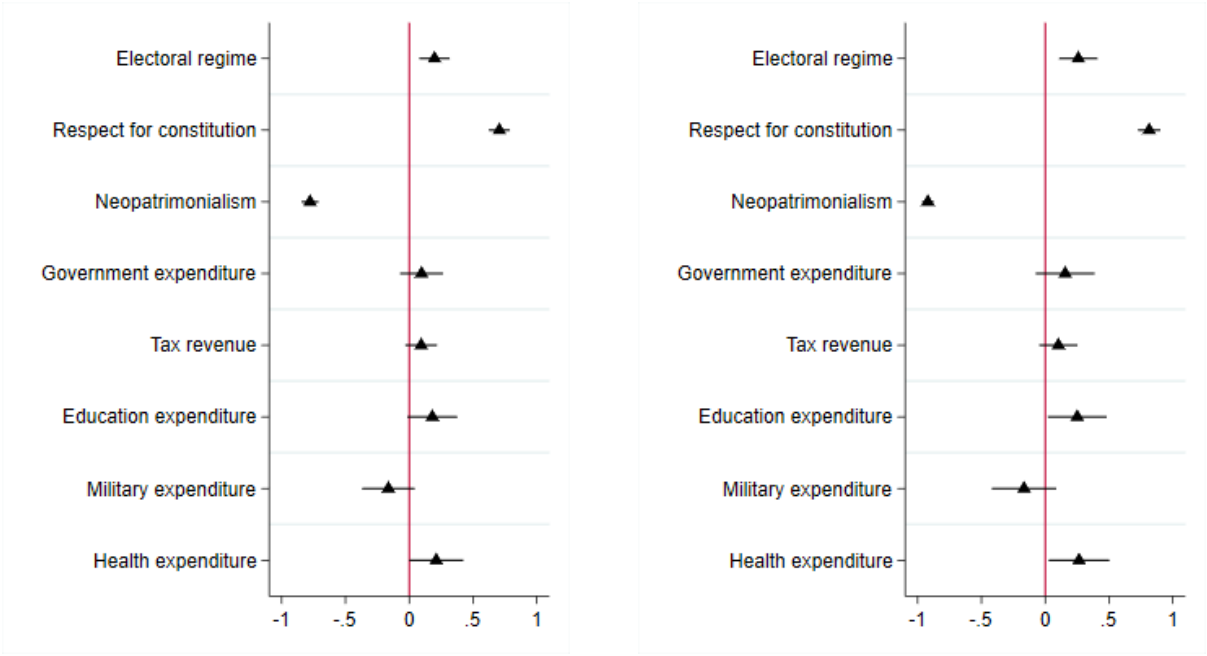
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7: Policy choices, leadership styles and leaders' background.

Columns 1–4 are WLS estimates where the dependent variables are leaders' effects on each outcome estimated using the methodology of Section 4.1, and weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. Columns 5–8 are OLS estimates where the dependent variables are the mean of each outcome during a leader's term expressed in % of GDP. Standard errors are clustered at the country level. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories and the source of each dependent variable are detailed in Appendix A.

On the contrary, there is a negative (but insignificant) association between military expenditure and leaders' performance. Yet, as policy outcomes from columns 5–8 of Table 7 are the simple average over leaders' terms, the coefficients regarding leaders' type might be explained by the endogeneity of leaders' backgrounds with respect to the initial policy level rather than by leaders' choices. While I will discuss endogeneity concerns in more detail in the following section, Figure E3 of Appendix E shows that the initial level of taxes and of expenditures in the analyzed dimensions does not explain leaders' effects on the overall performance.

Even though former military leaders are sometimes acclaimed because they worry less about dissenters' views and can therefore take unpopular but necessary policy decisions, I show that on average they damage the performance of a nation. This can be, at least partially, explained by the lack of institutional constraints on them, but also by the fact that they tend to establish a personalistic regime, disrespect constitution, and therefore pervade formal institutions in place. Moreover, their lower levels of social spending can be at play. When it comes to politicians, their positive effect is to some extent triggered by their experience, by their respect to institutions, and by their higher level of



(a) Additive index

(b) PCA index

Figure 6: Leaders' performance, leadership styles and policy choices.

The graphs plot the coefficient for the leaders' effects of the first four outcomes, and for the remaining four the average during a leader's term. The dependent variable in sub-figure (a) is the additive index, which is an unweighted sum of the standardized leaders' effects on growth, democracy, corruption, property rights, rule of law, and conflict; and in sub-figure (b) is the PCA (Principal Component Analysis) index which is a linear combination of same outcomes in such a way that we retain most of the information (see Appendix F). Each coefficient is obtained in a different WLS regression where the weights are the ratio between the absolute value of the leader effect on the aggregate index and the posterior standard deviation. Standard errors are clustered at the country level. All variables are standarized to have mean 0 and standard deviation 1. The regressions for electoral regime, respect for constitution, and neopatrimonialism include 693 observations each, for government expenditure 605, for tax revenue 342, education expenditure 381 observations, military expenditure 529 observations, health expenditure 228 observations. The criteria used to build the background's categories and the source and definition of each dependent variable are detailed in Appendix A.

investment in health and education. Previous experience can promote learning-by-doing skills to choose the optimal policy choices. Also, there can be a selection effect in electoral systems, since the fact that they previously held visible offices can send voters a signal of their quality. In other words, among those politicians, those who performed well would have higher chances to become national leaders. As stated by Besley (2005), previous experience is an opportunity to reveal political competence. Dal Bó et al. (2017) also show that politicians are positively selected, as they are on average smarter and with better leadership potential than the population they represent. Finally, the non-significant effect for academics is not necessarily driven by their incompetence or because higher education does not matter. It could indeed be driven because they prefer not to intervene (Ellis et al., 2015); or because there is a high heterogeneity of skills within this category.

6 Robustness tests

6.1 Endogeneity concerns

One important threat to identification is that selection of rulers from a specific background might be driven by the initial quality of governance, giving rise to potential endogeneity. In Table 8, I use a conditional logit to test whether the dependent variables used in this paper predict the background of a leader. The level of democracy in the year previous to a leader's transition is highly significant in explaining the ruler's background and so does the level of property rights. Even though it is not possible to fully account for this source of endogeneity, I control for the initial level of these two variables when the leader enters office. Table D9 shows the robustness of the baseline results: rulers with a military career are associated with a strong and negative effect, while former vice presidents, prime ministers, or presidents are instead correlated with positive national outcomes.

Another difficulty of empirically analyzing the impact of politicians is that leaders' transitions depend on economic and social conditions. Coups are more likely to occur in recessions, and heads of democracies are more likely to be reelected during economic booms (Londregan and Poole, 1990). This endogeneity in the timing of transitions is confirmed in Part A of Table 9, which shows that growth rate, democracy, corruption, conflict and rule of law scores are significant for predicting a transition the following year. I test whether the results hold using a restricted sample of leaders' transitions considered exogenous. I follow Jones and Olken (2005), who used the political transitions of leaders who died in office by natural causes, as these are unpredictable events and independent of economic conditions. With the same principle, I add to these types

	(1) Military leader	(2) Academic	(3) Politician
Growth_{t-1}	0.174	-0.104	0.211
	(0.175)	(0.156)	(0.206)
Normalized Polity IV $_{t-1}$	-0.485***	0.209***	0.368***
	(0.068)	(0.061)	(0.067)
Corruption $_{t-1}$	0.016	0.102	0.048
	(0.148)	(0.112)	(0.133)
Conflict $_{t-1}$	0.007	-0.013	-0.025
	(0.041)	(0.035)	(0.041)
Property Right $_{t-1}$	-0.191*	0.132*	0.150*
	(0.098)	(0.075)	(0.077)
Rule of law $_{t-1}$	-0.029	-0.057	0.156
	(0.189)	(0.130)	(0.180)
Observations	773	773	773
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1			

Table 8: Endogeneity of leaders' background

Pooled probit with errors clustered at the country level. Table reports the average marginal effects of each variable on the probability of a national leader from a specific category, denoted as column names, taking power in year t. The criteria used to build the background categories is detailed in Appendix A.

	(1) **X** = Growth	(2) **X** = Democracy	(3) **X** = Corruption	(4) **X** = Conflict	(5) **X** = Property rights	(6) **X** = Rule of law
			A- Full sample			
X_{t-1}	-0.479***	0.313***	-0.572***	0.067**	0.266	0.495***
	(0.122)	(0.064)	(0.174)	(0.031)	(0.172)	(0.151)
X_{t-2}	0.045	-0.055	0.485***	0.008	0.040	-0.187
	(0.125)	(0.066)	(0.177)	(0.032)	(0.174)	(0.155)
Observations	8,171	9,295	9,193		8,518	9,193
			B- Restricted sample			
X_{t-1}	-0.268	0.245	-0.342	0.121	-0.054	-0.456
	(0.336)	(0.203)	(0.539)	(0.089)	(0.575)	(0.572)
X_{t-2}	0.274	-0.237	0.382	-0.243**	-0.024	0.481
	(0.344)	(0.205)	(0.540)	(0.096)	(0.583)	(0.574)
Observations	5,248	6,034	6,041	5,058	6,041	6,041
			Robust standard errors in parentheses			
			*** p<0.01, ** p<0.05, * p<0.1			

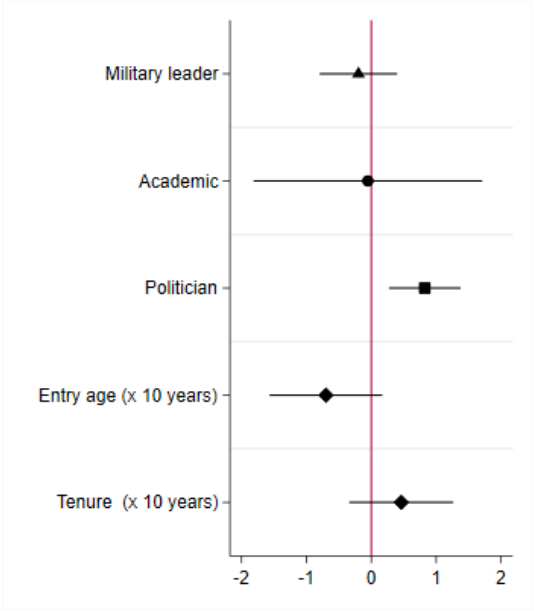
Table 9: Endogeneity of transitions' timing

Conditional fixed-effects logistic regression model with standard errors clustered at the country level. Part A reports the average marginal effects of each variable on the probability of occurring a national leader transition in year t. Part B reports the average marginal effects of each variable on the probability of occurring a national leader transition that follows a leader's death by natural causes or his resignation due to health issues in year t.

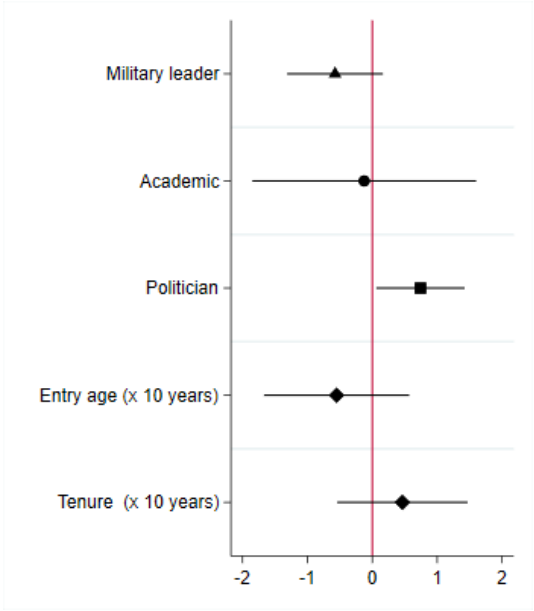
of transitions 14 cases where the leader resigned due to health issues.[53] As shown in Part B of Table 9, none of these variables remains significant for predicting a leader's transition, except for the second order lagged value of conflict. I then replicate the baseline results with leaders belonging to this selected set of transitions in Table D10 of Appendix D, and the main conclusions hold: military leaders tend to decrease the quality of governance, despite their positive and significant effect on economic growth, while politicians are positively associated with better governance. Notice that when controlling only for graduate education in Table D11, the positive effect of holding a university degree is still significantly positive only for growth, in line with Besley et al. (2011) who also focus on this kind of exogenous transitions. Yet, it is non-significant for all other outcomes.

Despite being no exogenous variation that can be exploited for every individual leader, Easterly and Pennings (2020) found, using Monte Carlo simulations, that even if tenure is as endogenous as it is in the data, it does not affect the accuracy of forecast bias of the least-squares estimates proposed by them for their analysis of growth data. It is important to mention that even though the timing of those transitions can be considered exogenous, it does not solve the endogeneity of leaders' backgrounds. Therefore, endogeneity both in timing and in the leaders' background cannot fully be tackled together, and the presented estimates in this paper cannot be claimed as causal. As stated by Ahlquist and Levi (2011) one of the important remaining challenges of the leaders-related literature is to

[53] I provide the names of the leaders belonging to this restricted sample in Appendix G.

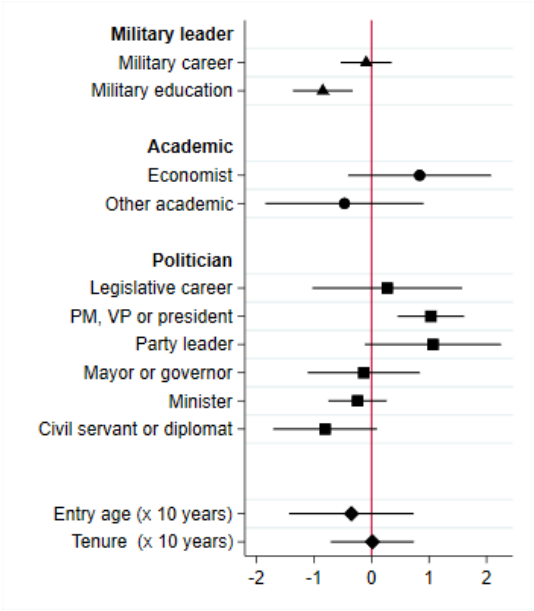


(a) Additive index

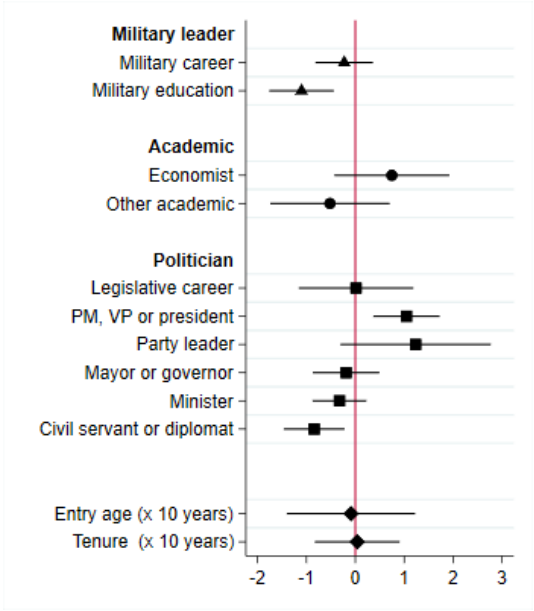


(b) PCA index

Panel B: Sub-categories



(a) Additive index



(b) PCA index

Figure 7: Leaders' performance and leaders' background using a restricted sample of exogenous transitions.

The graphs plot the coefficient for each leaders' category on the estimated leaders' effects obtained in Section 4. Those are post-estimations of weighted least-squares estimations where the weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. The criteria used to build the background categories is detailed in Appendix A. I restrict the sample to leaders with tenure equal to or longer than three years. The number of leaders included in each regression is: .

incorporate the endogenous emergence of leaders.

6.2 Sample period and estimation methods

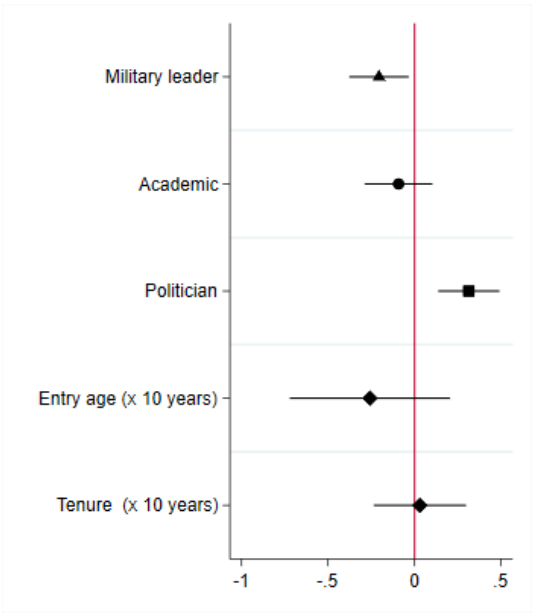
Another concern may arise from the fact that the sample includes the inter-war period as well as that of World War II, which were marked by intense conflicts, severe external constraints for specific countries and a higher weight on national leaders' decisions, which may trigger the results. Indeed, even though Baturo (2016) dataset considers leaders who were in office from 1960 to 2010, some of those entered office as from 1931. Information from the remaining leaders (i.e those who stayed in power between 1931 and 1960) was complemented using the Ellis et al. (2015). To test for the robustness of this choice, I restrict the sample to the period 1960–2010, and the main results hold, as shown in Appendix D (Tables D12 and D13 when controlling for the main and sub categories respectively).

Given the two-stage procedure employed to estimate leaders' effects, it is important to test the robustness of the results for the chosen method. In the previous section, I estimate a WLS using as weights the ratio between the absolute value of leaders' effects and the post-estimated standard deviation. This approach gives more weight to those leaders whose effects are more accurately estimated. Figure 8 presents the robustness using an OLS with bootstrapped standard errors, giving the same weight to all the observations.[54] Alternatively, I estimate the probability of having a positive and significant effect on the quality of governance with respect to national leaders' categories. I define, for each outcome y considered, a categorical variable that I denote Good_{yi} with three levels: 1 if the leader i's effect on output y is significant and positive; 0 if the leader's effect is not significant and -1 if the leader's effect is significant and negative. I then estimate an ordered probit on the probability that a leader i has either a negative, a non-significant, or a positive effect. Figure 9 displays the odds ratios of the marginal effects of having a significant and positive effect ($Good_{yi} = 1$) for the aggregated indexes.[55] Both the bootstrap and the ordered probit approaches suggest that the main findings are not driven by the bias of the weights given in the baseline estimations, as the positive (negative) effect of former prime ministers, vice-presidents or presidents (military career) remains robust.

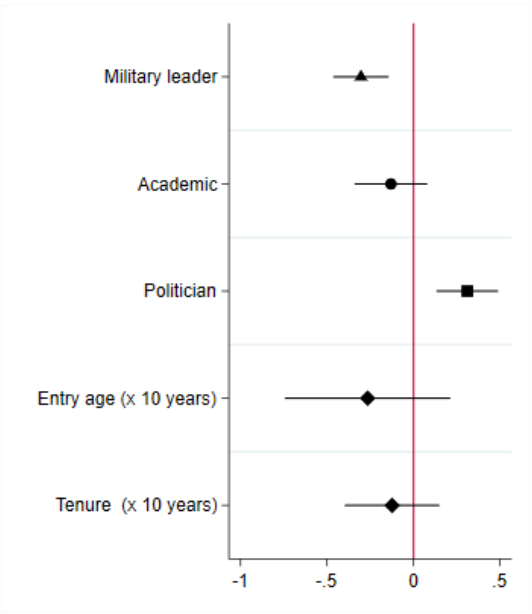
Finally, I test the results without using Easterly and Pennings (2020) method nor restricting the sample to those leaders with more than three years of tenure, as this was a substantial sample restriction.[56] Similarly to Marx et al. (2022) and Mercier (2016), I use as dependent variables the variation of each outcome, measured as the mean variable during a leader's term minus the initial value of the variable. On the right side of the

[54] Tables D14 and D15 display the associated regression tables.
[55] Tables D16 and D17 display the associated regresstion tables.
[56] There is an inherent trade-off between precision in leaders' estimates and sample restriction.

Panel A: Main categories

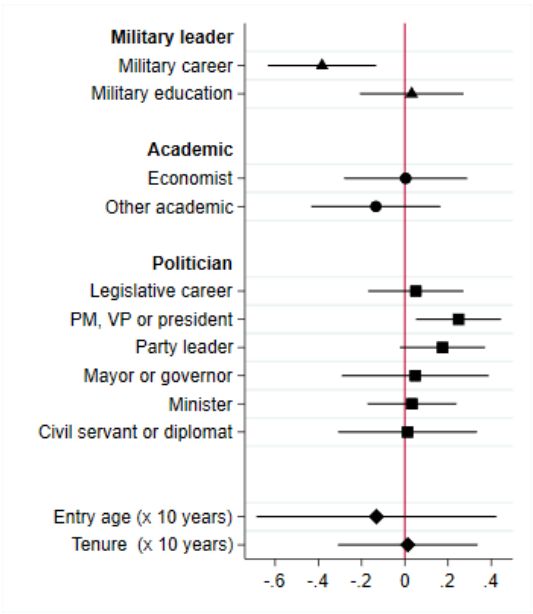


(a) Additive index

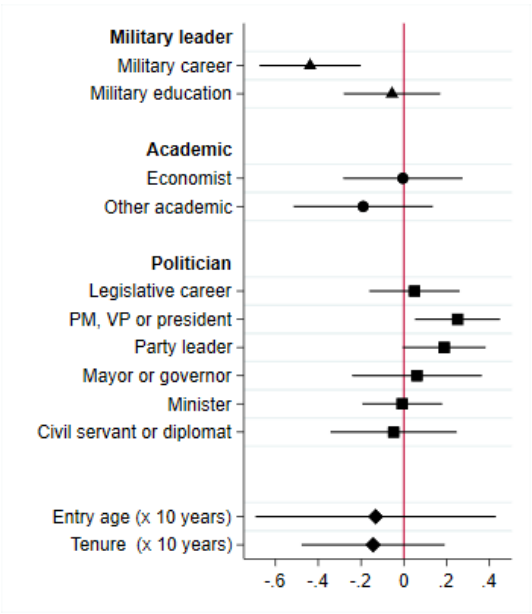


(b) PCA index

Panel B: Sub-categories



(a) Additive index

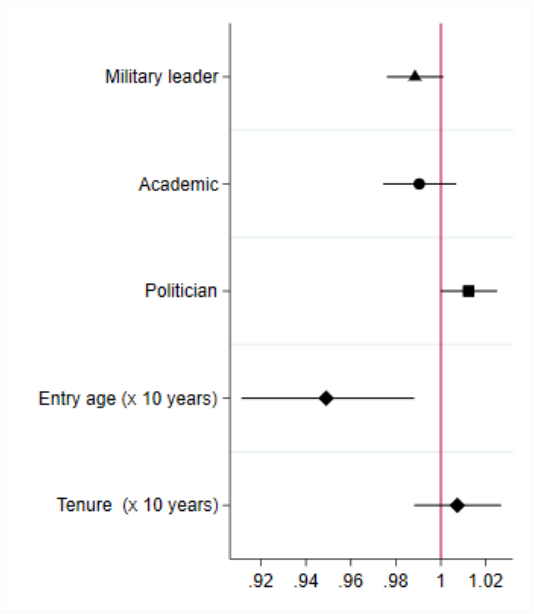


(b) PCA index

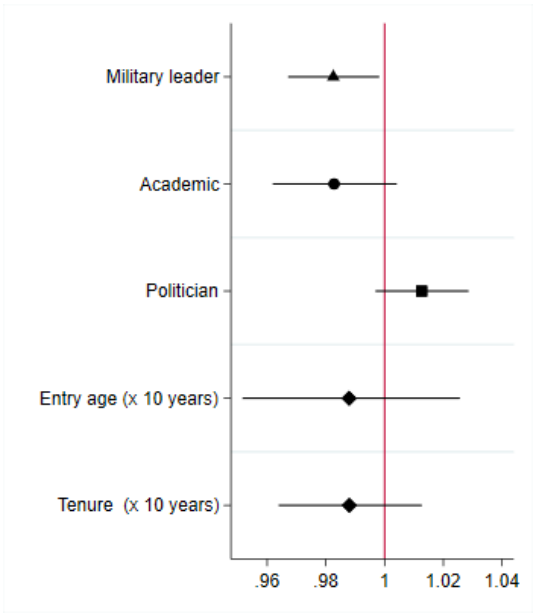
Figure 8: Leaders' performance and leaders' background with bootstrapped standard errors.

The graphs plot the coefficient for each leaders' category on the estimated leaders' effects obtained in Section 4. Those are post-estimations of OLS with bootsrapped standard errors with 1,000 repetitions. In each regression I control for all categories together, tenure, entry age. The criteria used to build the background categories is detailed in Appendix A. I restrict the sample to leaders with tenure equal to or longer than three years. The number of leaders included in each regression is 693.

Panel A: Main categories

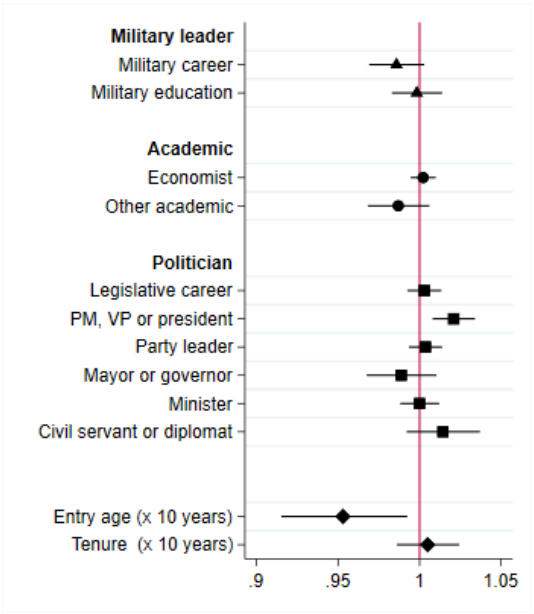


(a) Additive index

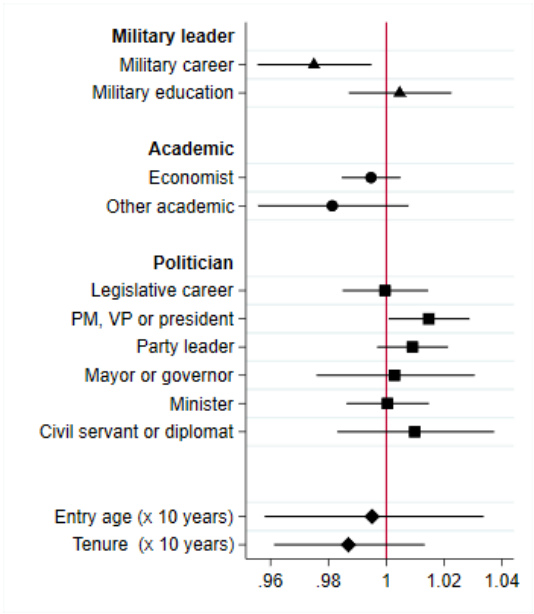


(b) PCA index

Panel B: Sub-categories



(a) Additive index



(b) PCA index

Figure 9: Odds ratios on the probability of being a "good" leader.

The graphs plot the coefficient for each leaders' category on the estimated leaders' effects obtained in Section 4. Those are post-estimations of weighted least-squares estimations where the weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. In each regression I control for all categories together, tenure, entry age. The criteria used to build the background categories is detailed in Appendix A. I restrict the sample to leaders with tenure equal to or longer than three years. There are 693 observations in each regression.

	(1) Δ Growth	(2) Δ Democracy	(3) Δ Corruption	(4) Δ Rule of law	(5) Δ Property rights	(6) Δ Conflict
Military leader						
Military career	0.032	-0.433***	-0.258**	-0.465***	-0.168	-0.126
	(0.137)	(0.106)	(0.122)	(0.136)	(0.112)	(0.084)
Military education	-0.130	-0.069	0.061	0.033	0.282***	0.025
	(0.123)	(0.097)	(0.128)	(0.117)	(0.106)	(0.092)
Academic						
Economist	0.131	0.056	0.123	0.285**	0.091	0.088
	(0.110)	(0.113)	(0.099)	(0.113)	(0.092)	(0.064)
Other academic	0.144	0.169*	0.006	0.008	0.138	-0.051
	(0.114)	(0.101)	(0.100)	(0.083)	(0.088)	(0.080)
Politician						
Legislative career	0.094	0.168**	-0.116	-0.043	0.202**	0.014
	(0.063)	(0.080)	(0.071)	(0.062)	(0.083)	(0.057)
PM, VP or president	0.131	0.213***	-0.003	0.102	0.198**	0.020
	(0.096)	(0.071)	(0.086)	(0.080)	(0.078)	(0.075)
Mayor or governor	0.034	0.378**	-0.195	0.144	0.425**	0.036
	(0.193)	(0.154)	(0.144)	(0.171)	(0.186)	(0.124)
Party leader	0.196**	0.295***	0.188*	0.412***	0.137*	0.050
	(0.081)	(0.078)	(0.097)	(0.117)	(0.083)	(0.078)
Minister	0.275***	0.253***	0.068	0.199***	0.226**	0.062
	(0.070)	(0.071)	(0.060)	(0.075)	(0.100)	(0.073)
Civil servant or diplomat	0.030	0.087	0.019	0.002	0.182	-0.086
	(0.091)	(0.110)	(0.085)	(0.123)	(0.149)	(0.109)
Tenure (x 10 years)	0.940***	-0.325**	-0.470**	-0.333***	0.374**	0.465***
	(0.150)	(0.129)	(0.201)	(0.124)	(0.187)	(0.131)
Tenure^2	-0.116***	-0.011	0.107	0.027	-0.157**	-0.075*
	(0.041)	(0.040)	(0.081)	(0.037)	(0.078)	(0.038)
Entry age (x 10 years)	0.105	-0.007	-0.115	-0.180	-0.005	0.087
	(0.269)	(0.182)	(0.183)	(0.208)	(0.178)	(0.185)
Entry age^2	-0.014	0.004	0.011	0.015	0.003	-0.005
	(0.024)	(0.016)	(0.016)	(0.019)	(0.016)	(0.017)
Initial growth	-0.308***					
	(0.071)					
Initial democracy		-2.537***				
		(0.196)				
Initial corruption			3.907***			
			(0.462)			
Initial rule of law				-4.045***		
				(0.472)		
Initial property right					-2.359***	
					(0.392)	
Initial conflict						1.807***
						(0.121)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,493	1,635	1,641	1,641	1,641	1,533
Adjusted R-squared	0.264	0.239	0.226	0.212	0.125	0.370

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Outcomes variation and leaders' background.

OLS estimators. Dependent variables are the average variation of the outcome during a leader's term minus the initial value. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A.

equation, I include leaders' characteristics, country fixed-effects, and the initial level of the outcome, as in Mercier (2016). Indeed, improvements or deteriorations in an outcome might be more or less likely to occur depending on the initial level of the variable.

Table 10 displays the estimates for the sub-categories. With a significant larger number of leaders, from $1,493$ to $1,641$ depending on the outcome considered, we still observe

a general negative effect of leaders with a military career, and a positive one triggered by politicians who held visible offices before coming to power (party leaders, prime minister, vice presidents, former presidents or ministers).

6.3 Robustness of leaders' categories and national outcomes

Considering the correlation between leaders' careers and educational backgrounds illustrated in Figure 3, in the main section I constructed categories based on the most frequent leaders' occupation and degrees, and accounted for the observed correlations. These choices, as well as the aggregation of backgrounds into three groups, may suffer from arbitrariness. In this section, I rely on a LASSO model to choose the relevant variables.

First, I include as a set of potential covariates all the disaggregated categories of

	(1)	(2)	(3)	(4)	(5)	(6)
	Additive index			**PCA index**		
	adaptative lasso	bic lasso	elastic-net	adaptative lasso	bic lasso	elastic-net
Panel A: Careers and degrees (29 covariates)						
Military career	-0.336	-0.199	-0.257	-0.242	-0.212	-0.211
PM, VP or president	0.314	0.076	0.201	0.282	0.207	0.175
Tenure (x 10 years)	-0.125	-0.033	-0.0788	-0.181	-0.151	-0.136
Degree in law × Party leader	0.282		0.146			
Party leader			0.041	0.187	0.157	0.131
Degree in economics			0.028		0.064	0.040
Entry age (x 10 years)			0.012			
Degree in law × PM, VP or president			0.058		0.082	0.071
Degree in science				-0.169	-0.176	-0.118
Military career × Military education				-0.239	-0.213	-0.193
Observations	693	693	693	693	693	693
Panel B: Careers, degrees, constraints and experience (57 covariates)						
PM, VP or president	0.454	0.308	0.330	0.439	0.316	0.284
Tenure (x 10 years)	-0.259	-0.192	-0.202	-0.324	-0.258	-0.236
Military career × Military education	-0.320	-0.101	-0.169	-0.731	-0.545	-0.463
Constraint	0.659	0.526	0.517	0.628	0.596	0.554
Party leader				0.241	0.134	0.132
Degree in economics	0.313		0.112		0.049	0.052
PM, VP or president × Military career	0.169		0.058	0.350	0.147	0.109
Military career			-0.007			-0.039
Degree in law × Party leader	0.362	0.061	0.167			
Military career × Years of experience	0.018		0.004			
Years of experience			0.0003		0.0008	0.002
Mayor or governor × Years of experience	0.002		0.0002			
Entry age (x 10 years)		0.018	0.029			
Degree in law × PM, VP or president			0.020			0.018
Degree in science				-0.756	-0.356	-0.292
Observations	586	586	586	586	586	586

Table 11: Leaders' effects and leaders' selected covariates using a LASSO approach.

LASSO estimators. Dependent variables are the leaders' effects estimated in Section 4. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Informative weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. Standard errors are clustered at the country level.

	(1) Without growth	(2) Without democracy	(3) Without corruption	(4) Without rule of law	(5) Without property rights	(6) Without conflict
Military leader						
Military career	-1.823***	-1.528**	-1.778***	-1.448***	-1.820***	-1.685***
	(0.534)	(0.589)	(0.544)	(0.423)	(0.545)	(0.584)
Military education	-0.229	0.445	0.214	0.199	-0.081	-0.327
	(0.616)	(0.775)	(0.594)	(0.529)	(0.651)	(0.599)
Academic						
Economist	-0.120	0.565	-0.081	-0.139	0.470	0.111
	(0.697)	(0.589)	(0.660)	(0.507)	(0.502)	(0.642)
Other academic	-1.211	-0.859	-0.336	-0.335	-1.316	-0.544
	(0.892)	(0.707)	(0.782)	(0.669)	(0.819)	(0.773)
Politician						
Legislative career	0.668	0.545	0.735	0.475	0.243	0.868
	(0.614)	(0.546)	(0.507)	(0.442)	(0.554)	(0.557)
PM, VP or president	1.186**	1.065**	1.166***	0.960**	1.362***	1.294***
	(0.499)	(0.518)	(0.389)	(0.372)	(0.506)	(0.463)
Mayor or governor	-0.402	-0.270	0.090	-0.200	0.287	0.516
	(0.892)	(0.787)	(0.755)	(0.681)	(0.866)	(0.844)
Party leader	0.409	0.101	0.388	0.336	0.831	0.418
	(0.663)	(0.725)	(0.507)	(0.468)	(0.611)	(0.709)
Minister	-0.161	0.149	0.180	0.137	0.437	0.275
	(0.627)	(0.632)	(0.590)	(0.508)	(0.558)	(0.468)
Civil servant or diplomat	-0.219	0.085	0.578	0.485	-0.077	0.466
	(0.648)	(0.650)	(0.706)	(0.662)	(0.756)	(0.698)
Tenure (x 10 years)	-0.607	-0.037	0.973	0.324	-0.759	-0.328
	(0.809)	(0.813)	(0.686)	(0.578)	(0.766)	(0.835)
Tenure^2	-0.110	-0.125	-0.405**	-0.239*	0.042	-0.205
	(0.216)	(0.199)	(0.182)	(0.141)	(0.191)	(0.219)
Entry age (x 10 years)	-1.066	-1.700	-0.592	-0.690	-1.421	-0.840
	(1.153)	(1.311)	(1.236)	(0.998)	(1.251)	(1.062)
Entry age^2	0.096	0.159	0.071	0.074	0.129	0.074
	(0.107)	(0.122)	(0.116)	(0.093)	(0.113)	(0.098)
Observations	752	707	693	693	693	749
Adjusted R-squared	0.134	0.060	0.132	0.102	0.130	0.163

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Leaders' effects on the additive index dropping one outcome at time.

WLS estimators. Dependent variables are an additive index on the leaders' effects estimated in Section 4 when dropping one outcome in each column. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. Standard errors are clustered at the country level.

careers, academic degrees, educational level, as well as those interactions between and across careers and degrees with over 30 observations. Thus, I consider new variables such as holding a degree in science, engineering, the interaction between having a degree in law with ministers and party leaders, among others. Panel A of Table 11 displays the results under different model choices. The relevant variables triggering the results that are robust for all model specifications are a military career (with a negative coefficient), former prime ministers, vice-presidents and presidents (with a positive coefficient) and tenure. Further, in half of the specifications, having been a party leader or holding a bachelor's degree in economics is associated with a positive effect, while holding a degree in science with a negative coefficient stressing the heterogeneity behind holding a university degree.

When adding constraints on the executive, former years of experience in formal politics, as well as all the interactions of these variables with careers and degrees, Panel B

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ICRG Quality of governance		1.265***		1.967***		1.822***		1.958***
Government effectiveness	0.430**		0.801***		0.746***		0.734***	
	(0.165)		(0.209)		(0.214)		(0.213)	
Decade FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Region FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Region*Decade FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	218	338	218	338	218	338	218	338
Adjusted R-squared	0.127	0.074	0.220	0.065	0.232	0.087	0.310	0.140
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Table 13: Correlation between alternative performance indicators and the additive index

.

WLS estimators. The dependent variable is the additive index which is an unweighted sum of the standardized leaders' effects on all the outcomes. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. Standard errors are clustered at the country level.

reveals that the effect of former prime ministers, vice presidents and presidents is still robust as well as the negative effect for tenure. Further, as previously found, constraints have a positive effect on leaders' performance and military career is only robust under two specifications. These results confirm that the negative effect of military rulers can be explained by the initial weakness of institutions in where they tend to come to power. Notice, however, that the interaction between military career and military education remains significant for the PCA index. Yet, completely disentangling the effect of leaders' backgrounds from the institutional context is a hard task that is out of the scope of this paper.

Next, I present robustness on the aggregated indexes. First, I drop one by one the outcomes used to construct the aggregated indicators. Results are displayed in Table 12. In all cases, rulers with military careers are associated with negative and strong coefficients, while prime ministers, vice-presidents and former presidents with positive effects. This suggests that results presented in the main section are not fully driven by one specific indicator. Finally, I show the correlation between the aggregated indexes and alternative indicators of quality of governance: the World Bank government effectiveness measure, and the ICRG Quality of governance index. The first combines a measure of the quality of public service, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies. The ICRG indicator corresponds to the mean value of the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality", scaled from 0 to 1 (Teorell et al. (2018) based on ICRG (2017)). Both indicators are positively and strongly correlated with the additive index (see Table 13) and with the PCA index (Table D18).

7 Conclusion

This paper estimates national leaders' effects on quality of governance using a methodology inspired by the teacher-value added literature proposed by Easterly and Pennings (2020). I compare three type of leaders: politicians, wisemen, and strongmen.

I find robust evidence that leaders with a former military background are associated with a worse quality of governance, while rulers who have been prime ministers or have a long career trajectory in politics show an overall positive effect on institutional and economic outcomes. Leaders' educational attainment is not relevant for explaining the direction of leaders' effects, casting doubt on the epistocracy and technocracy argument for being ruled by the wise, the scientists, or the experts. It also questions the implementation of laws that impose minimum education requirements for candidates.[57] Indeed, the average effect for graduate leaders is only positive when not controlling for leaders' backgrounds, and for leaders' effects on growth which are weakly correlated with leaders' effects on alternative outcomes. These results forewarn on the use of growth for assessing national leaders' performance and of graduate education for assessing leaders' quality.

The effect of leaders' backgrounds has to be considered in their given institutional context. The positive effects of politicians are stronger under unconstrained regimes, where they have more room to shape outcomes. Yet, constraints compensate for the negative effect of military leaders by disciplining them. Imposing strong institutional constraints can avoid the negative effect of bad leaders but also hide the positive impact of good rulers. Nonetheless, the bond between leaders and institutions appears to be more complex. Military leaders are more likely to establish a regime based on personal authority, with lower levels of respect for the law, and with a higher likelihood of removing elections as the mechanism to select the chief executive. Therefore, leaders from different backgrounds differ in the extent to which they respect formal institutions. Overall, as Weber (1947) argued, both leaders and institutions matter, and they both interact in an important way. Whether leaders prime over institutions, or whether the contrary holds remains an open question for future research. Leaders' backgrounds are also relevant for policy decisions. Consistently, I find that military leaders invest less in education and health, while the opposite holds for politicians.

Even though the results of this paper cannot be fully claimed as causal, they are strongly informative and contribute to the mapping between national leaders' characteristics and their overall performance.

[57] Those requirements have been recently applied in certain Indian states.

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Acknowledgments

I thank my advisors Nicolas Berman and Marc Sangnier. I also thank Vincenzo Galasso, Marion Mercier, Pierre Michel, Avner Seror, four anonymus referees and seminar participants at AMSE, Konstanz University and the CESifo 13th Workshop on Political Economy, and four anonymous referees for valuable comments and feedback. The project leading to this publication has received funding from the french government under the "France 2030" investment plan managed by the French National Research Agency (reference :ANR-17-EURE-0020) and from Excellence Initiative of Aix-Marseille University - A*MIDEX.

Appendix

A Data source

A.1 Leaders data

The principal source of leaders' data is Baturo (2016) which provides detailed information regarding leaders' careers and academic fields. It identifies the *effective* leaders of each state, the ones with *de facto* executive power, who have been in power from 1960 to 2010. However, among those, some rulers took power as from 1931. To have the full sample of leaders who were in power from 1931 to 1960 I complement the data with Ellis et al. (2015) database. Having a larger set of leaders allows for a better estimation of leaders' effects in section 4.1.

As both databases were built based on Goemans et al. (2009), in the period and the countries in which both overlap, $1,232$ out of $1,331$ leaders are present in both dataset Among the ones who don't, 70 are present only in the Ellis et al. (2015) and 19 only in the Baturo (2016) data set. Notice, that among the total of discrepancies, only 23 had a tenure larger or equal than three years and are relevant for the main analysis. Where those mismatches occur, I retained the head of government pointed by the Baturo (2016) dataset. In the period and/or countries not covered by this data set, and whenever there is more than one leader per country in a given year (mainly in transitional years) I design as national leader the one who stayed more months in office.

Both databases use multiple data sources such as leaders' biographies, reference works, government websites, newspaper archives, book references, as well as web references or historical dictionaries.[58]. The variables related to leaders' backgrounds vary in their reliability. However, as the authors of Baturo (2016) claim, career or prior political posts are generally reliable because most bibliographic sources usually report such facts and those are not subject to interpretation. While other variables, such as the number of years in politics, can involve a certain degree of subjectivity. Baturo (2016) includes years in formal politics that accounts for years in official politics, such as being a member of parliament, governor or city mayor, among others, and general years of experience that additionally accounts for any political activity such as party membership or civil service offices.

A.1.1 Leaders' categories

Despite listing each leader's previous career and education is roughly an objective task, the aggregation of those into categories implies an unavoidable grade of discretion. For instance, both datasets have a variable to identify "career politicians". This variable is labeled *career_pol* in Baturo (2016) and *careerpolitician* in Ellis et al. (2015). The following table highlights great discordance among this dimension: 462 leaders out of the $1,232$ who overlap are classified differently.[59]

[58]Examples for book references in Baturo (2016) are Bienen and Van de Walle (1991) or Lentz III (1994); examples of web references are www.rulers.org, www.worldstatesmen.com and of historical dictionaries is http://www.hls-dhs-dss.ch/

[59]Baturo (2016) code Career politician as 1 if "leader is primarily career politician, as ascertained from years in formal politics and prior career categories", while Ellis et al. (2015) do not provide information of the criteria used.

career_pol (Coursus Honorum)	careerpolitician (LEAD) 0	1	Total
0	462	151	613
1	311	308	619
Total	771	459	1,232

Table A1: Comparison between career politician variables across datasets

Thus, I built new categories starting from the detailed previous career and education provided by Baturo (2016). For a precise analysis, we would need to interact each career with each academic degree, as well as with any other career which is correlated. As the number of observations does not enable this, I consider the three clusters displayed in Figure 3. Then, I associate to those groups careers with similar duties, as detailed below.[60]

Military leader encompasses leaders with a military career and/or a military education defined as follows:

1. Military career is coded one if the variable careerdescribe contains at least one of the following expressions "army", "mil junta", "military", "armed forces", "commander", "chief", "armed forces" or "defence", or if the variable *militarycareer* from Ellis et al. (2015) equals one.

2. Military education is coded one if the variable militaryedu from Ellis et al. (2015) equals one, or if the variable *education_alldetail* from Baturo (2016) contains the word "military".

Academic is coded one if the variable Ph.D. from Baturo (2016) equals one, or the variable *careerdescribe* contains the word "academic". This category includes:

1. Economists: is coded one if academic equals one and the leader holds a degree in economics. Degree in economics is defined as a dummy that equals one if the variable *education_alldetail* from Baturo (2016) includes the word "economics".

2. Other academic: is coded one if academic equals one and economist is coded zero.

Politician includes the following sub-categories:

1. Legislative career is coded one if the variable *careerdescribe* contains at least one of the following expressions: "mp" (member of parliament), "parliament", "senator", "legislator", "senate", "speaker", "supreme court judge" or "legislative".

2. Prime minister, vice-president or former president is coded one if the variable *careerdescribe* contains at least one of the following expressions: "vice president", "preindependence leader", "pm", "ex president", "pres of mali", or "president" without including "son".

[60] Alternatively, I use a LASSO approach to include all potential interactions between careers and degrees, as well as within careers, with more than 30 observations and detect the relevant variables in Section 6.3.

3. Party leader is coded one if the variable *careerdescribe* contains at least one of the following expressions: "party leader", "party chairman", "1st secretary"

4. Minister is coded one if the variable *careerdescribe* contains at least one of the following expressions: "min" and the above-defined dummy prime minister differs from one.

5. Mayor or governor is coded one if the variable *careerdescribe* contains at least one of the following words: "mayor" or "governor".

I do not restrict to exclusive categories, both because defining one sole career per individual can be subject to interpretation and because the secondary career might matter as well for policy choices. Table A2 shows common frequency between different sub-categories.

A.2 Descriptive statistics by sample restriction

Leaders' effects on each individual outcome are estimated using the sample of leaders without missing information on each outcome. Further, Section 5 restricts to leaders without missing information on background categories. Table A3 shows that this doesn't affect the representativeness of the sample, as leaders in each sample restriction are similar in their age, experience, and backgrounds.

A.3 Outcomes data

Table A4 provides the definition and the source of each variable used to measure leaders' performance, as well as for mechanisms and heterogeneity in Section 5.2.

		Military leaders		Academics		Politicians					
		Military career	Military education	Economists	Other academics	Legislative career	PM, VP or president	Party leader	Mayor or governor	Minister	Civil servant or diplomat
Military leaders	Military career	240									
	Military education	175	215								
Academics	Economists	0	0	38							
	Other academics	6	2	0	69						
Politicians	Legislative career	3	3	4	17	121					
	PM, VP or president	36	35	8	18	4	214				
	Party leader	6	13	8	19	69	31	183			
	Mayor or governor	1	27	1	5	2	6	3	51		
	Minister	34	18	10	17	9	0	21	2	164	
	Civil servantor diplomat	2	1	5	3	4	17	8	5	8	59

Table A2: Frequency of leaders' subcategories

The table displays the frequency of leaders who belong simultaneously to the subcategory listed in the row and the one listed in the column.

	Growth sample	Democracy sample	Corruption sample	Rule of law sample	Property rights sample	Conflict sample	Aggregated indexes sample
Number of leaders	771	816	839	848	857	780	693
Mean entry age	52.6	52.2	52.1	52.2	52.2	51.9	52.4
Mean previous years of experience in politics	15.9	15.6	15.7	157.0	15.6	15.4	156.3
Mean previous years of experience in formal politics	12.2	12.0	12.1	121.4	12.1	12.0	120.3
Leaders category							
Military leaders							
Military career	218 (28.3%)	235 (28.8%)	235 (28.0%)	240 (28.0%)	236 (27.8%)	229 (29.4%)	209 (30.2%)
Military education	193 (25.0%)	212 (26.0%)	212 (25.3%)	215 (25.1%)	213 (25.1%)	210 (26.9%)	189 (27.3%)
Academics							
Economist	28 (3.6%)	30 (3.7%)	30 (3.6%)	31 (3.6%)	31 (3.7%)	27 (3.5%)	25 (3.6%)
Other	70 (9.1%)	69 (8.5%)	71 (8.5%)	75 (8.8%)	74 (8.7%)	63 (8.1%)	56 (8.1%)
Politicians							
Legislative career	116 (15.0%)	110 (13.5%)	118 (14.1%)	121 (14.1%)	120 (14.2%)	110 (14.1%)	98 (14.1%)
PM, VP or president	187 (24.3%)	201 (24.6%)	211 (25.1%)	214 (25.0%)	212 (25.0%)	190 (24.4%)	162 (23.4%)
Party leader	175 (22.7%)	171 (21.0%)	181 (21.6%)	182 (21.2%)	182 (21.5%)	164 (21.0%)	147 (21.2%)
Minister	151 (16.6%)	159 (19.5%)	162 (19.3%)	164 (19.1%)	163 (19.2%)	152 (19.5%)	140 (20.2%)
Mayor or governor	47 (6.1%)	47 (5.8%)	49 (5.8%)	51 (6.0%)	51 (6.0%)	43 (5.5%)	38 (5.5%)
Civil servant/diplomat	50 (6.5%)	55 (6.7%)	57 (6.8%)	59 (6.9%)	58 (6.8%)	54 (6.9%)	46 (6.6%)

Table A3: Leaders' characteristics by sample restriction

National leaders' sample is restricted to those with tenure equal or longer than 3 years who were in power from 1931 to 2010. Each column provides data description of the leaders without missing information for each outcome. Data is taken from Baturo (2016) and Ellis et al. (2015). Standard deviations are reported in parenthesis. Years in formal politics (from Baturo (2016)) account for years in official politics, such as being a member of parliament, governor or city mayor, among others, while the general indicator additionally accounts for any political activity such as party membership or civil service offices. Leaders with substantial constraints are those from whom the Polity IV Executive Constraints is higher or equal than 4 the year before the leader enters office. The criteria used to build the background categories is detailed in Appendix A.

Variable	Definition	Source
Growth	$\ln(\text{rGDPpc}_t)$ - $\ln(\text{rGDPpc}_{t-1})$ where rGDPpc_t is the real GDP per capita in year t based on multiple benchmark comparisons of prices and incomes across countries.	Bolt et al. (2018)
Democracy	Polity IV score. There are threespecial values -66, -77 and -88 which correspond to anocracies, and I recode them as 0.	Marshall and Gurr (2018)
Corruption	Executive corruption index. Answer to the question: "How routinely do members of the executive, or their agents grant favors in exchange for bribes, kickbacks, or other material inducements, and how often do they steal, embezzle, or misappropriate public funds or other state resources for personal or family use?"	Coppedge et al. (2019)
Property rights	Answer to the question: "Do citizens enjoy the right to private property? Clarification: Private property includes the right to acquire, possess, inherit, and sell private property, including land. Limits on property rights may come from the state which may legally limit rights or fail to enforce them; customary laws and practices; or religious or social norms. This question concerns the right to private property, not actual ownership of property."	Coppedge et al. (2019)
Rule of law	Answer to the question: "To what extent are laws transparently, independently, predictably, impartially, and equally enforced, and to what extent do the actions of government officials comply with the law?"	Coppedge et al. (2019)
Conflict	Dummy coded one if the country participated in an international or national armed conflict; or if there is a civil war (defined as at least one intra-state war with at least 1,000 battle deaths).	Coppedge et al. (2019)
Constraints	Dummy coded one if Constraint on Chief Executive (XCONST) is greater or equal than 4 (which corresponds to substantial constraints or executive parity or subordination).	Marshall and Gurr (2018)
Electoral regime index	Dummy coded one if regularly scheduled national elections are on course, as stipulated by election law or well-established precedent.	Coppedge et al. (2019)
Respect for constitution	Original name: Executive respects constitution. Answer to the question: "Do members of the executive (the head of state, the head of government, and cabinet ministers) respect the constitution?"	Coppedge et al. (2019)
Neopatrimonialism index	Answer to the question: "To what extent is rule based on personal authority?" Clarification: Following Clapham (1985), neopatrimonial rule reflects the idea that personalistic forms of authority pervade formal regime institutions.	Coppedge et al. (2019)
Total expenditures	Share of government consumption at current PPPs.	Feenstra et al. (2015)
Total government revenue	Total government revenue including taxes, non-tax revenue, grants and social contributions in % of GDP.	ICTD/UNU-WIDER (2016)
Military expenditures	Military expenditures in % of GDP using the NATO definition, which includes all current and capital expenditures on the armed forces, including peace-keeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities	Teorell et al. (2018) based on ICRG (2017)
Health expenditures	Public health expenditures in % of GDP. Includes recurrent and capital spending from government (central and local) budgets, external borrowings and grants.	Teorell et al. (2018) based on ICRG (2017)
Education expenditures	General government expenditure on education (current, capital, and transfers) in % of GDP. General government usually refers to local, regional and central governments.	Teorell et al. (2018) based on ICRG (2017)
Government effectivness	Combines into a single index responses on the quality of public service, the quality of the bureaucracy, the competence of civil servants, the independence of the civil service from political pressures, and the credibility of the government's commitment to policies.	Teorell et al. (2018) based on World Bank (2016)
ICRG Indicator of quality of governance	The mean value of the ICRG variables "Corruption", "Law and Order" and "Bureaucracy Quality",scaled from 0 to 1, with higher values corresponding higher quality of government.	Teorell et al. (2018) based on ICRG (2017)

Table A4: Variables' sources and definition

B Easterly and Pennings' (2020) methodology

Easterly and Pennings (2020) propose a least-squares leader estimator (λ_i^{LS}) using the average growth for leader i, $\overline{g}_i$, and the average growth under other leaders from the same country, $\overline{g}_{-ic}$, which is considered a better proxy for the country effect. The idea is to give a weight to those two variables according to their *signal-to-noise* ratio. More precisely, they estimate:

$$\min_{\psi,\gamma} E[\lambda_i - \hat{\lambda}_i^{LS}]^2 \quad \text{where} \quad \hat{\lambda}_i^{LS} = \psi_i(\overline{g}_i - \gamma_i \overline{g}_{-ic}) \tag{4}$$

where the optimal weights γ_i and ψ_i are given respectively by equations (5) and (6).

$$\gamma_i = \frac{cov(\overline{g}_i \overline{g}_{-ic})}{var(\overline{g}_{-ic})} = \frac{\sigma_c^2}{\sigma_c^2 + \frac{\sigma_e^2}{Nc - T_i} + \frac{\sigma_\lambda^2}{L_{-ict}}} \tag{5}$$

$$\psi_i = \frac{cov(\lambda_i, \overline{g}_i - \hat{\gamma}\overline{g}_{-ic})}{var(\overline{g}_i - \hat{\gamma}\overline{g}_{-ic})} = \frac{\sigma_\lambda^2}{\sigma_\lambda^2 + \sigma_c^2(1-\hat{\gamma}) + \frac{\sigma_e^2}{T_i}} \tag{6}$$

Before estimating the weights it is necessary to estimate the variance components which are given by equations (7), (8) and (9).

$$\hat{\sigma}_{\epsilon,c}^2 = \frac{1}{T - N_L} \sum_{i=1}^{N_L} \sum_{t=1}^{T_i} (g_{ict} - \overline{g}_{ic})^2 \tag{7}$$

where T_i is the tenure of leader i, T is de total number of observations for country c and N_L is the total number of leaders of country c.

$$\hat{\sigma}_c^2 = \frac{\sum_c \sum_{i \neq j, t \neq s} g_{ict} g_{jcs}}{\sum_{i \neq j, t \neq s} \mathbf{1}_{ict} \mathbf{1}_{jcs}} \tag{8}$$

$$\hat{\sigma}_\lambda^2 = \frac{\sum_c \sum_{t \neq s} g_{ict} g_{ics}}{\sum_{t \neq s} \mathbf{1}_{ict} \mathbf{1}_{ics}} - \hat{\sigma}_c^2 \tag{9}$$

Once estimating $\hat{\lambda}_i^{LS}$, their final step is to check whether it is statistically different from zero, by calculating confidence intervals at 95% confidence assuming that $\hat{\lambda}^{LS}$ follows a normal distribution with mean 0 and variance $\hat{\sigma_\lambda}^2$, given by the following equation:

$$95\%CI = [\hat{\lambda}_i^{LS} - 1.96 \;\; \sigma_\lambda \sqrt{1 - \psi_i} \;\; ; \;\; \hat{\lambda}_i^{LS} + 1.96 \;\; \sigma_\lambda \sqrt{1 - \psi_i}]$$

where $\sigma_\lambda \sqrt{1 - \psi_i}$ is the post-standard deviation of leaders' effects.

C Leaders' rankings

Table C1: Ranking of significant leaders' effects on growth and property rights

(1) Growth	(2) Property rights
1° Figl (Austria,1946–1952): 0.044	1° Bagabandi (Mongolia,1998–2005): 0.327
2° Roosevelt, F. (United States,1933–1944): 0.032	2° Enkhbayar (Mongolia,2006–2009): 0.303
3° Khama (Botswana,1967–1980): 0.032	3° Berger Perdomo (Guatemala,2004–2007): 0.262
4° Walesa (Poland,1991–1995): 0.029	4° Alvaro Colom (Guatemala,2008–2010): 0.262
5° Ikeda (Japan,1961–1964): 0.029	5° Alfonso Portillo Cabrera (Guatemala,2000–2003): 0.261
6° Idris (Libya,1952–1969): 0.027	6° Mandela (South Africa,1994–1999): 0.254
7° Masire (Botswana,1981–1997): 0.027	7° Shishakli (Syria,1950–1953): 0.254
8° Sato (Japan,1965–1972): 0.027	8° Forbes (New Zealand,1930–1935): 0.234
9° Bruton (Ireland,1995–1997): 0.026	9° Ghazi (Iraq,1934–1938): 0.232
10° de Gasperi (Italy,1946–1953): 0.025	10° Ochirbat (Mongolia,1990–1997): 0.227
11° Panday (Trinidad and Tobago,1996–2001): 0.025	11° Flores, Francisco (El Salvador,2000–2004): 0.216
12° Kishi (Japan,1957–1960): 0.025	12° Saca Gonzalez (El Salvador,2005–2009): 0.215
13° Monteiro (Cape Verde,1991–2000): 0.025	13° Yeltsin (Russia,1992–1999): 0.214
14° Chissano (Mozambique,1987–2004): 0.025	14° Bachelet (Chile,2006–2009): 0.211
15° Faisal (Saudi Arabia,1965–1974): 0.024	15° Kuwatli (Syria,1944–1948): 0.208
16° Mintoff (Malta,1972–1984): 0.024	16° Mbeki (South Africa,2000–2008): 0.203
17° Lee Kuan Yew (Singapore,1960–1990): 0.023	17° Boris III (Bulgaria,1919–1943): 0.202
18° Adenauer (Germany,1950–1963): 0.022	18° Gyanendra Bir Bikram Shah Deva (Nepal,2003–2007): 0.201
19° Chiang Ching-Kuo (Taiwan,1978-1987): 0.022	19° Nadir Shah (Afghanistan,1930–1933): 0.197
20° Medici (Brazil,1970–1973): 0.021	20° Macdonald, Ramsay (United Kingdom,1930–1935): 0.194
21° Manning (Trinidad and Tobago,2002–2009): 0.021	21° Nguema Mbasogo (Equatorial Guinea,1980–2010): 0.191
22° Pereira (Cape Verde,1976–1990): 0.019	22° Ben Ali Bourguiba (Tunisia,1958–1987): 0.187
23° Subhuza II (Swaziland,1969–1982): 0.019	23° Hashim Khan (Afghanistan,1934–1945): 0.186
24° Museveni (Uganda,1986–2010): 0.019	24° Lon Nol (Cambodia,1970–1974): 0.177
25° Hee Park (South Korea,1962–1979): 0.019	25° Sihanouk (Cambodia,1954–1969): 0.177
26° De Gaulle (France,1959–1968): 0.019	26° Ricardo Lagos Escobar (Chile,2000–2005): 0.175
27° Menzies (Australia,1939–1941): 0.018	27° Alvaro Uribe Velez (Colombia,2003–2010): 0.173
28° Sarit (Thailand,1959–1963): 0.018	28° Ulmanis (Latvia,1934–1940): 0.170
29° Churchill (United Kingdom,1940–1945): 0.018	29° Wasmosy Monti (Paraguay,1994–1998): 0.169
30° Penaranda (Bolivia,1940–1943): 0.018	30° Abdul-Ilah (Iraq,1939-1952): 0.169
31° Raab (Austria,1953–1960): 0.017	31° Paul Kagame (Rwanda,2001–2010): 0.166
32° Santer (Luxembourg,1985–1994): 0.017	32° Senanayake, Don (Sri Lanka,1948–1951): 0.166
33° Ozal (Turkey,1984–1989): 0.017	33° Smigly-Rydz (Poland,1935-1939): 0.165
34° King (Canada,1936–1948): 0.017	34° Trujillo (Colombia,1991–1994): 0.163
35° Lyons (Australia,1931–1938): 0.016	35° Bai Koroma (Sierra Leone,2008–2010): 0.160
36° Lopez Portillo (Mexico,1977–1982): 0.016	36° Ataturk (Turkey,1923–1938): 0.159
37° Chun Doo Hwan (South Korea,1981–1987): 0.016	37° Pizano (Colombia,1995–1998): 0.159
38° Roh Tae Woo (South Korea,1988–1992): 0.016	38° Zeroual (Algeria,1994–1998): 0.159
39° Lee Teng-Hui (Taiwan,1988-1999): 0.015	39° Trovoada (Sao Tome and Principe,1991–2001): 0.158
40° Castaneda Castro (El Salvador,1945–1948): 0.015	40° Aylwin (Chile,1990–1993): 0.157
41° Haughey (Ireland,1987–1991): 0.015	41° Abdallah (Comoros,1978–1989): 0.155
42° Antall (Hungary,1990–1993): 0.015	42° Nicanor Duarte Frutos (Paraguay,2004–2008): 0.154
43° Brundtland (Norway,1991–1996): 0.015	43° Antonescu (Romania,1941–1944): 0.154
44° Chiang Kai-shek (Taiwan,1950-1974): 0.015	44° Febres Cordaro (Ecuador,1985–1988): 0.153
45° Endara (Panama,1990–1994): 0.014	45° Antall (Hungary,1990–1993): 0.152
46° Grunitzky (Togo,1963–1966): 0.014	46° Calfa (Czechoslovakia,1990–1992): 0.152
47° Do Muoi (Vietnam,1992–1997): 0.014	47° Betancourt (Venezuela,1959–1963): 0.151
48° Papadopoulos (Greece,1968–1973): 0.014	48° Bandaranaike, S.W.R.D. (Sri Lanka,1956–1959): 0.151
49° Manmohan Singh (India,2004–2010): 0.014	49° Pildsudski (Poland,1926–1934): 0.150
50° Manley (Jamaica,1989–1991): 0.014	50° Putin (Russia,2000–2010): 0.150
(...)	
832° de Valera (Ireland,1931–1947): -0.013	940° Saddam Hussein (Iraq,1980–2002): -0.145
833° Senghor (Senegal,1961–1980): -0.013	941° Ahmad Badawi (Malaysia,2004–2008): -0.146
834° Arbenz Guzman (Guatemala,1951–1954): -0.013	942° Verwoerd (South Africa,1959–1966): -0.146
835° Garcia Perez (Peru,1986–1990): -0.013	943° Kwasniewski (Poland,1996–2005): -0.148
836° Hamad Isa Ibn Al-Khalifah (Bahrain,1999-2010): -0.013	944° Siphandon (Laos,1998–2005): -0.149
837° Gandhi, I. (India,1966–1976): -0.013	945° Ibanez Campo (Chile,1953–1958): -0.150
838° Mussolini (Italy,1923–1943): -0.013	946° Choibalsan (Mongolia,1936–1951): -0.150
839° Dupong (Luxembourg,1945–1953): -0.013	947° Hua Guofeng (China,1977–1980): -0.154
840° Carias Andino (Honduras,1933–1948): -0.014	948° Mohammad Mossadeg (Iran,1951–1953): -0.154
841° Bruce Golding (Jamaica,2008–2010): -0.014	949° Jorge Batlle (Uruguay,2000–2004): -0.157
842° Kaunda (Zambia,1965–1991): -0.014	950° Barco Vargas, Virgilio (Colombia,1987–1990): -0.157
843° Oueddei (Chad,1979–1982): -0.014	951° Macias Nguema (Equatorial Guinea,1969–1979): -0.158
844° Desai (India,1977–1979): -0.014	952° Vazkuez (Uruguay,2005–2009): -0.158
845° Chambers (Trinidad and Tobago,1981–1986): -0.014	953° Vorster (South Africa,1967–1978): -0.160

846° Ayatollah Khomeini (Iran,1979–1989): -0.014
847° Chavez (Paraguay,1950–1953): -0.015
848° Nasser (Egypt,1955–1970): -0.015
849° Machel (Mozambique,1976–1986): -0.015
850° Morinigo (Paraguay,1941–1948): -0.015
851° Bennett (Canada,1931–1935): -0.015
852° Sheikh Mujib Rahman (Bangladesh,1972–1975): -0.015
853° Mello (Brazil,1990–1992): -0.015
854° Muhammad al-Amin (Tunisia,1943-1957): -0.015
855° Laurent Gbagbo (Cote d'Ivoire,2001–2010): -0.016
856° Mohammed V (Morocco,1956–1960): -0.016
857° Marcos (Philippines,1966–1985): -0.016
858° Stauning (Denmark,1929–1941): -0.016
859° Ho Chi Minh (Vietnam,1946–1969): -0.016
860° Fahd (Saudi Arabia,1983–1995): -0.016
861° Ntibantunganya (Burundi,1994–1996): -0.016
862° Truman (United States,1945–1952): -0.017
863° Kim Jong-Il (North Korea,1995-2010): -0.017
864° Ferenc Gyurcsany (Hungary,2005–2008): -0.018
865° Metaxas (Greece,1936–1940): -0.019
866° Laurent Kabila (Democratic Republic of Congo,1997–2000): -0.019
867° Mobutu (Democratic Republic of Congo,1966–1996): -0.019
868° Dollfuss (Austria,1931–1934): -0.022
869° Amin, Idi (Uganda,1971–1978): -0.022
870° Chifley (Australia,1946–1949): -0.023
871° Paz Estenssoro (Bolivia,1952–1956): -0.024
872° Atlee (United Kingdom,1946–1951): -0.026
873° Cedras (Haiti,1992–1994): -0.026
874° Manley (Jamaica,1972–1980): -0.027
875° Khalifah Ath-Thani (Qatar,1972-1995): -0.028
876° Jimenez, Enrique Adolfo (Panama,1946–1948): -0.029
877° Yeltsin (Russia,1992–1999): -0.029
878° Junichiro Koizumi (Japan,2001–2006): -0.030
879° Quisling (Norway,1940–1944): -0.031
880° Ochirbat (Mongolia,1990–1997): -0.037
881° Laval (France,1942–1944): -0.082

954° Mswati (Swaziland,1986–2010): -0.161
955° Al-Bashir (Sudan,1990-2010): -0.163
956° Lech Kaczynski (Poland,2006–2009): -0.163
957° Bashar al-Assad (Syria,2001-2010): -0.164
958° Franco (Spain,1939–1975): -0.166
959° Sayasone (Laos,2006–2010): -0.166
960° Metaxas (Greece,1936–1940): -0.168
961° Muhammad al-Amin (Tunisia,1943-1957): -0.169
962° Botha (South Africa,1979–1988): -0.171
963° Cristiani (El Salvador,1990–1994): -0.172
964° Meles Zenawi (Ethiopia,1991–2010): -0.182
965° Mohan Rana (Nepal,1948–1950): -0.185
966° Godmanis (Latvia,1990–1993): -0.188
967° Pinto da Costa (Sao Tome and Principe,1976–1990): -0.192
968° Tsaldaris (Greece,1933–1935): -0.194
969° Kumaratunga (Sri Lanka,1995–2005): -0.194
970° Heng Samrin (Cambodia,1979–1984): -0.196
971° Mengistu Marriam (Ethiopia,1977–1990): -0.199
972° Rajapaksa (Sri Lanka,2006–2010): -0.203
973° Al-Assad H. (Syria,1971-2000): -0.205
974° deKlerk (South Africa,1990–1993): -0.211
975° Le Duan (Vietnam,1970–1986): -0.214
976° Salazar (Portugal,1933–1968): -0.217
977° Stalin (Russia,1923–1952): -0.219
978° Stroessner (Paraguay,1955–1988): -0.227
979° Mao Tse-Tung (China,1950-1976): -0.229
980° Kim Jong-Il (North Korea,1995-2010): -0.234
981° Burhanuddin Rabbani (Afghanistan,1993–1996): -0.238
982° Mullah Omar (Afghanistan,1997–2001): -0.249
983° Machel (Mozambique,1976–1986): -0.252
984° Caetano (Portugal,1969–1973): -0.260
985° Pol Pot (Cambodia,1975–1978): -0.280
986° Tsedenbal (Mongolia,1952–1984): -0.309
987° Hugo Chavez (Venezuela,1999–2010): -0.324
988° Batmonh (Mongolia,1985–1989): -0.346
989° Castro (Cuba,1959–2010): -0.529

The table reports leaders' rank, leaders' names and leaders' effects on growth (in column 1) and on property rights (column 2) of the first and last fifty leaders of each outcome. The leader's country and the leader's years in power are reported between parentheses. The sample is restricted to leaders with tenure equal or longer than three years.

Table C2: Ranking of significant leaders' effects on corruption and rule of law

(1) Corruption	(2) Rule of law
1° Arevalo (Guatemala,1945–1950): 0.470	1° U Nu (Myanmar,1948–1956): 0.486
2° Arbenz Guzman (Guatemala,1951–1954): 0.458	2° Arbenz Guzman (Guatemala,1951–1954): 0.328
3° Roh Moo Hyun (South Korea,2003–2007): 0.399	3° Al-Hamadi (Yemen Arab Republic,1975-1977): 0.303
4° Kuwatli (Syria,1944–1948): 0.378	4° Kuwatli (Syria,1944–1948): 0.300
5° Pol Pot (Cambodia,1975–1978): 0.357	5° Arevalo (Guatemala,1945–1950): 0.288
6° Hoxha (Albania,1945–1984): 0.330	6° Tito (Yugoslavia,1946–1979): 0.286
7° Violeta Chamorro (Nicaragua,1990–1996): 0.329	7° Chen Shui-bian (Taiwan,2000-2007): 0.277
8° Banda (Malawi,1965–1993): 0.328	8° Sihanouk (Cambodia,1954–1969): 0.269
9° Shishakli (Syria,1950–1953): 0.328	9° Mbeki (South Africa,2000–2008): 0.269
10° Kountche (Niger,1974–1987): 0.307	10° Calfa (Czechoslovakia,1990–1992): 0.254
11° Meles Zenawi (Ethiopia,1991–2010): 0.288	11° Mandela (South Africa,1994–1999): 0.253
12° L. Khan (Pakistan,1949–1951): 0.281	12° Jawara (Gambia,1965–1994): 0.250
13° Calfa (Czechoslovakia,1990–1992): 0.275	13° Benes (Czechoslovakia,1936–1938): 0.242
14° Al-Hamadi (Yemen Arab Republic,1975-1977): 0.274	14° Shishakli (Syria,1950–1953): 0.242
15° Abboud (Sudan,1959–1964): 0.270	15° Ma Ying-jeou (Taiwan,2008-2010): 0.238
16° Sukarno (Indonesia,1946–1948): 0.259	16° Betancourt (Venezuela,1959–1963): 0.237
17° Alfonsin (Argentina,1984–1988): 0.255	17° Masaryk (Czechoslovakia,1919–1935): 0.237
18° Smith (Zimbabwe,1966–1978): 0.255	18° Violeta Chamorro (Nicaragua,1990–1996): 0.235
19° Hurtado Larrea (Ecuador,1981–1984): 0.252	19° Hoxha (Albania,1945–1984): 0.234
20° Felipe Calderon (Mexico,2007–2010): 0.251	20° Roh Moo Hyun (South Korea,2003–2007): 0.222
21° Lee Myung-bak (South Korea,2008-2010): 0.251	21° L. Khan (Pakistan,1949–1951): 0.221
22° Frondizi (Argentina,1958–1961): 0.249	22° Ghazi (Iraq,1934–1938): 0.216
23° Arturo Illia (Argentina,1964–1966): 0.247	23° Museveni (Uganda,1986–2010): 0.213
24° Nyerere (Tanzania,1962–1985): 0.246	24° Caldera Rodriguez (Venezuela,1969–1973): 0.213
25° Paul Kagame (Rwanda,2001–2010): 0.245	25° Antonescu (Romania,1941–1944): 0.212

26° Alia (Albania,1985–1991): 0.245
27° Ugarteche (Peru,1957–1962): 0.244
28° Tadic (Yugoslavia,2005–2010): 0.242
29° Vicente Fox Quesada (Mexico,2001–2006): 0.239
30° Betancourt (Venezuela,1959–1963): 0.236
31° Kim Dae Jung (South Korea,1998–2002): 0.232
32° Levy Mwanawasa (Zambia,2002–2008): 0.229
33° Rahman (Malaysia,1960–1970): 0.226
34° Daniel Ortega (Nicaragua,1980–1989): 0.219
35° Boumedienne (Algeria,1966–1978): 0.217
36° Keita (Mali,1961–1968): 0.215
37° Bagaza (Burundi,1977–1987): 0.214
38° Belaunde (Peru,1964–1968): 0.211
39° Olympio (Togo,1960–1962): 0.210
40° Mengistu Marriam (Ethiopia,1977–1990): 0.210
41° Antonescu (Romania,1941–1944): 0.208
42° Sankara (Burkina Faso,1984–1987): 0.205
43° Leoni (Venezuela,1964–1968): 0.204
44° Enrique Bolanos (Nicaragua,2002–2006): 0.203
45° Kostov (Bulgaria,1997–2001): 0.203
46° Cabral (Guinea-Bissau,1975-1980): 0.198
47° Mokhehle (Lesotho,1995–1997): 0.189
48° Lon Nol (Cambodia,1970–1974): 0.184
49° Mohammed Ali (Pakistan,1953–1955): 0.183
50° Qabus Bin Said (Oman,1971–2010): 0.182

929° Noriega (Panama,1984–1989): -0.175
930° Makarios (Cyprus,1961–1974): -0.175
931° Gottwald (Czechoslovakia,1949–1952): -0.175
932° Zapotocky (Czechoslovakia,1953–1957): -0.176
933° Traore (Mali,1969–1990): -0.176
934° Sharif (Pakistan,1997–1999): -0.180
935° Chiang Kai-shek (Taiwan,1950-1974): -0.182
936° Putin (Russia,2000–2010): -0.183
937° Cristina Fernandez (Argentina,2008–2010): -0.184
938° Odria (Peru,1951–1956): -0.189
939° Marcos (Philippines,1966–1985): -0.190
940° Chiluba (Zambia,1992–2001): -0.190
941° Fatos Nano (Albania,2003–2005): -0.195
942° Nestor Kirchner (Argentina,2003–2007): -0.196
943° Iliescu (Romania,2001–2004): -0.198
944° Mugabe (Zimbabwe,1980–2010): -0.202
945° Bouteflika (Algeria,1999–2010): -0.202
946° Selassie (Ethiopia,1941–1974): -0.203
947° Shick Gutierrez (Nicaragua,1963–1966): -0.212
948° Diori (Niger,1961–1973): -0.218
949° Videla (Argentina,1976–1980): -0.218
950° Chiang Kai-shek (China,1929-1937): -0.218
951° Ahmad Badawi (Malaysia,2004–2008): -0.221
952° Wang Jingwei (China,1940–1944): -0.226
953° Chun Doo Hwan (South Korea,1981–1987): -0.226
954° Mussolini (Italy,1923–1943): -0.228
955° Mendez Manfredini (Uruguay,1977–1981): -0.229
956° Hee Park (South Korea,1962–1979): -0.239
957° Laval (France,1942–1944): -0.252
958° Eyadema (Togo,1967–2004): -0.253
959° Hamid Karzai (Afghanistan,2002–2010): -0.256
960° Alvarez Armalino (Uruguay,1982–1984): -0.266
961° Enkhbayar (Mongolia,2006–2009): -0.267
962° Menem (Argentina,1989–1999): -0.273
963° Burhanuddin Rabbani (Afghanistan,1993–1996): -0.282
964° Nkurunziza (Burundi,2006–2010): -0.283
965° Ranariddh (Cambodia,1994–1997): -0.298
966° Amin, Idi (Uganda,1971–1978): -0.304
967° Bashar al-Assad (Syria,2001-2010): -0.307
968° Al-Assad H. (Syria,1971-2000): -0.312
969° Suharto (Indonesia,1966–1997): -0.317
970° Hun Sen (Cambodia,1999–2010): -0.324
971° Rhee (South Korea,1949–1959): -0.342
972° Yahya (Yemen Arab Republic,1905–1947): -0.348
973° Fujimori (Peru,1991–2000): -0.356
974° Franco (Spain,1939–1975): -0.357
975° Pinochet (Chile,1974–1989): -0.387

26° Gyanendra Bir Bikram Shah Deva (Nepal,2003–2007): 0.212
27° Ugarteche (Peru,1957–1962): 0.210
28° Edwin Barclay (Liberia,1931–1943): 0.210
29° Qabus Bin Said (Oman,1971–2010): 0.208
30° Leoni (Venezuela,1964–1968): 0.202
31° Belaunde (Peru,1964–1968): 0.201
32° Kim Dae Jung (South Korea,1998–2002): 0.201
33° Hurtado Larrea (Ecuador,1981–1984): 0.198
34° Martinez Trueba (Uruguay,1951–1953): 0.197
35° Nkrumah (Ghana,1952–1965): 0.196
36° Nyerere (Tanzania,1962–1985): 0.196
37° Belaunde (Peru,1981–1985): 0.193
38° Ferrier (Suriname,1976–1980): 0.191
39° Ould Daddah (Mauritania,1961–1978): 0.190
40° Kim Young Sam (South Korea,1993–1997): 0.190
41° Sirleaf (Liberia,2006–2010): 0.188
42° Forbes (New Zealand,1930–1935): 0.186
43° Batlle Berres (Uruguay,1948–1950): 0.186
44° Guzman Fernandez (Dominican Republic,1979–1982): 0.184
45° Macdonald, Ramsay (United Kingdom,1930–1935): 0.183
46° Arturo Illia (Argentina,1964–1966): 0.183
47° Ben Ali Bourguiba (Tunisia,1958–1987): 0.182
48° Bambang Yudhoyono (Indonesia,2005–2010): 0.182
49° Amezaga (Uruguay,1943–1946): 0.179
50° Alfonsin (Argentina,1984–1988): 0.173

(...)

951° Odria (Peru,1951–1956): -0.182
952° Taylor (Liberia,1998–2003): -0.182
953° Sharif (Pakistan,1997–1999): -0.184
954° Velasco Alvarado (Peru,1969–1975): -0.186
955° Saw Maung (Myanmar,1989–1991): -0.191
956° Qaddafi (Libya,1970–2010): -0.192
957° Ahmad Badawi (Malaysia,2004–2008): -0.194
958° Ibn Yahya Hamid (Yemen Arab Republic,1948–1962): -0.199
959° Mohan Rana (Nepal,1948–1950): -0.200
960° Makarios (Cyprus,1961–1974): -0.201
961° Hun Sen (Cambodia,1999–2010): -0.202
962° Salazar (Portugal,1933–1968): -0.202
963° Mullah Omar (Afghanistan,1997–2001): -0.202
964° Evren (Turkey,1981–1983): -0.203
965° Amin, Idi (Uganda,1971–1978): -0.207
966° Putin (Russia,2000–2010): -0.208
967° Jammeh (Gambia,1995–2010): -0.208
968° Banzer Suarez (Bolivia,1972–1978): -0.209
969° Strasser (Sierra Leone,1992–1995): -0.222
970° Perez Jimenez (Venezuela,1951–1957): -0.224
971° Sa'id ibn Taimur (Oman,1931–1970): -0.224
972° Than Shwe (Myanmar,1992–2010): -0.225
973° Marcos (Philippines,1966–1985): -0.235
974° Al-Assad H. (Syria,1971-2000): -0.239
975° Chun Doo Hwan (South Korea,1981–1987): -0.241
976° Yahya (Yemen Arab Republic,1905–1947): -0.241
977° Bashar al-Assad (Syria,2001-2010): -0.243
978° Castro (Cuba,1959–2010): -0.248
979° Gomez (Venezuela,1909–1935): -0.252
980° Videla (Argentina,1976–1980): -0.252
981° Nkurunziza (Burundi,2006–2010): -0.252
982° Burhanuddin Rabbani (Afghanistan,1993–1996): -0.260
983° Metaxas (Greece,1936–1940): -0.261
984° Rajapaksa (Sri Lanka,2006–2010): -0.269
985° Papadopoulos (Greece,1968–1973): -0.276
986° Rhee (South Korea,1949–1959): -0.277
987° Bordaberry (Uruguay,1972–1976): -0.280
988° Chiang Kai-shek (Taiwan,1950-1974): -0.290
989° Hee Park (South Korea,1962–1979): -0.292
990° Al-Bashir (Sudan,1990-2010): -0.293
991° Suharto (Indonesia,1966–1997): -0.297
992° Noriega (Panama,1984–1989): -0.327
993° Laval (France,1942–1944): -0.330
994° Mussolini (Italy,1923–1943): -0.370
995° Franco (Spain,1939–1975): -0.383
996° Fujimori (Peru,1991–2000): -0.386
997° Mendez Manfredini (Uruguay,1977–1981): -0.412

976° Al-Bashir (Sudan,1990-2010): -0.389
977° Rajapaksa (Sri Lanka,2006–2010): -0.392
978° Hugo Chavez (Venezuela,1999–2010): -0.417
998° Pinochet (Chile,1974–1989): -0.432
999° Alvarez Armalino (Uruguay,1982–1984): -0.455
1000° Hugo Chavez (Venezuela,1999–2010): -0.470

The table reports leaders' rank, leaders' names and leaders' effects on corruption (in column 1) and on rule of law (column 2) of the first and last fifty leaders of each outcome. The leader's country and the leader's years in power are reported between parentheses. The sample is restricted to leaders with tenure equal or longer than three years. Leaders' effects on corruption are multiplied by -1, so a positive value indicates an decrease in corruption.

Table C3: Ranking of significant leaders on democracy and conflict

(1) Democracy	(2) Conflict
1° Jawara (Gambia,1965–1994): 0.521	1° Ariel Sharon (Israel,2001–2005): 0.652
2° Mara (Fiji,1971–1986): 0.511	2° Sihanouk (Cambodia,1954–1969): 0.545
3° Shagari (Nigeria,1980–1983): 0.470	3° Blair (United Kingdom,1997–2007): 0.433
4° Osman Daar (Somalia,1961–1967): 0.461	4° Zahir Shah (Afghanistan,1963–1973): 0.401
5° Kuwatli (Syria,1944–1948): 0.454	5° Bagaza (Burundi,1977–1987): 0.395
6° Balewa (Nigeria,1961–1965): 0.421	6° Benjedid (Algeria,1979–1991): 0.390
7° Souvanna Phouma (Laos,1956–1958): 0.412	7° Ryti (Finland,1941–1944): 0.384
8° Ortiz (Argentina,1938–1942): 0.411	8° Mobutu (Democratic Republic of Congo,1966–1996): 0.371
9° Wang Jingwei (China,1940–1944): 0.411	9° Mahmud Khan Ghazi (Afghanistan,1946–1953): 0.369
10° Al-Mirghani (Sudan,1986-1989): 0.404	10° Boumedienne (Algeria,1966–1978): 0.355
11° Andres Perez (Venezuela,1974–1978): 0.396	11° Ubico Castaneda (Guatemala,1931–1944): 0.353
12° Bagabandi (Mongolia,1998–2005): 0.388	12° Gorbachev (Russia,1985–1991): 0.345
13° Ousmane (Niger,1993–1995): 0.386	13° Mandela (South Africa,1994–1999): 0.337
14° Benes (Czechoslovakia,1936–1938): 0.382	14° Garcia (Philippines,1957–1961): 0.333
15° Masaryk (Czechoslovakia,1919–1935): 0.380	15° Sardar Mohammad Daud Khan (Afghanistan,1974–1977): 0.330
16° Enkhbayar (Mongolia,2006–2009): 0.376	16° Khamenei (Iran,1990–2010): 0.326
17° Margai, A (Sierra Leone,1964–1966): 0.374	17° Mohammad Reza (Iran,1954–1978): 0.324
18° Caldera Rodriguez (Venezuela,1969–1973): 0.369	18° Lopez Pumarejo (Colombia,1935–1938): 0.308
19° Smith (Zimbabwe,1966–1978): 0.364	19° Santos (Colombia,1939–1942): 0.308
20° Chen Shui-bian (Taiwan,2000-2007): 0.356	20° Inonu (Turkey,1962–1964): 0.297
21° Margai,M (Sierra Leone,1961–1963): 0.348	21° Bonifacio Ondo Edu (Equatorial Guinea,1964–1968): 0.297
22° Dutra (Brazil,1946–1950): 0.348	22° Anastasio Somoza Garcia (Nicaragua,1947–1956): 0.296
23° Vargas (Brazil,1951–1954): 0.346	23° Hansson (Sweden,1937–1946): 0.295
24° Alfonsin (Argentina,1984–1988): 0.332	24° Olaya Herrera (Colombia,1931–1934): 0.291
25° Ma Ying-jeou (Taiwan,2008-2010): 0.331	25° Arevalo (Guatemala,1945–1950): 0.290
26° Obote (Uganda,1981–1985): 0.331	26° Nguema Mbasogo (Equatorial Guinea,1980–2010): 0.290
27° Hurtado Larrea (Ecuador,1981–1984): 0.327	27° Gomez (Venezuela,1909–1935): 0.288
28° Siles Zuazo (Bolivia,1983–1985): 0.325	28° Nguesso (Congo,1979–1992): 0.288
29° John Agyekum Kufuor (Ghana,2001–2008): 0.324	29° Lusinchi (Venezuela,1984–1988): 0.271
30° Rahman (Malaysia,1960–1970): 0.322	30° Joseph Kabila (Democratic Republic of Congo,2001–2010): 0.269
31° Arevalo (Guatemala,1945–1950): 0.317	31° Hashim Khan (Afghanistan,1934–1945): 0.261
32° Campins (Venezuela,1979–1983): 0.315	32° Chehab (Lebanon,1959–1964): 0.260
33° Kubitschek (Brazil,1956–1960): 0.314	33° Abdul-Ilah (Iraq,1939-1952): 0.259
34° Ferrier (Suriname,1976–1980): 0.313	34° Faisal II (Iraq,1953–1958): 0.259
35° Lyonpo Jigme Thinley (Bhutan,2008–2010): 0.305	35° Campins (Venezuela,1979–1983): 0.257
36° Demirel (Turkey,1975–1977): 0.303	36° Demirel (Turkey,1966–1970): 0.254
37° Guzman Fernandez (Dominican Republic,1979–1982): 0.286	37° Lopez Pumarejo (Colombia,1943–1945): 0.253
38° Lescot (Haiti,1941–1945): 0.282	38° Nakasone (Japan,1983–1987): 0.252
39° Tsaldaris (Greece,1933–1935): 0.281	39° Mugabe (Zimbabwe,1980–2010): 0.251
40° Khama (Botswana,1967–1980): 0.280	40° Hasina Wazed (Bangladesh,1997–2001): 0.247
41° Zafy (Madagascar,1993–1996): 0.279	41° Somare (Papua New Guinea,1976–1979): 0.247
42° Patasse (Central African Republic,1994–2002): 0.278	42° Mbeki (South Africa,2000–2008): 0.245
43° Ochirbat (Mongolia,1990–1997): 0.274	43° Sardar Mohammad Daud Khan (Afghanistan,1954–1962): 0.243
44° Karmal (Afghanistan,1980–1985): 0.274	44° Andres Perez (Venezuela,1989–1993): 0.238
45° Martinez Trueba (Uruguay,1951–1953): 0.273	45° Jiang Zemin (China,1995–2002): 0.237
46° Konare (Mali,1993–2002): 0.272	46° Siphandon (Laos,1998–2005): 0.231
47° Vincent (Haiti,1935–1940): 0.272	47° Rivera (El Salvador,1963–1967): 0.230
48° Lopez Michelsen (Colombia,1975–1978): 0.271	48° Than Shwe (Myanmar,1992–2010): 0.230
49° Pacheco Areco (Uruguay,1968–1971): 0.258	49° Anastasio Somoza Garcia (Nicaragua,1937–1946): 0.226
50° Paz Estenssoro (Bolivia,1986–1989): 0.253	50° Alfonso Portillo Cabrera (Guatemala,2000–2003): 0.224
	(...)
903° Lopez Contreras (Venezuela,1936–1940): -0.284	872° Mohammad Mossadeg (Iran,1951–1953): -0.324
904° Jiang Zemin (China,1995–2002): -0.285	873° Cerezo (Guatemala,1986–1990): -0.325
905° Hu Jintao (China,2003–2010): -0.292	874° Arana Osorio (Guatemala,1971–1974): -0.331
906° Arias (Costa Rica,2006–2009): -0.292	875° Salamanca (Bolivia,1931–1934): -0.334
907° Mainassara (Niger,1996–1998): -0.294	876° Najibullah (Afghanistan,1986–1991): -0.335
908° Castello Branco (Brazil,1964–1966): -0.296	877° Khrushchev (Russia,1953–1964): -0.343

909° Douglas MacArthur (Japan,1946–1950): -0.303
910° Ershad (Bangladesh,1982–1990): -0.306
911° Mswati (Swaziland,1986–2010): -0.306
912° Videla (Argentina,1976–1980): -0.308
913° Bordaberry (Uruguay,1972–1976): -0.308
914° Batmonh (Mongolia,1985–1989): -0.309
915° Inonu (Turkey,1939–1949): -0.312
916° Fujimori (Peru,1991–2000): -0.313
917° Chiang Kai-shek (Taiwan,1950-1974): -0.320
918° Stroessner (Paraguay,1955–1988): -0.321
919° Siphandon (Laos,1998–2005): -0.329
920° Sarit (Thailand,1959–1963): -0.329
921° Velasco Alvarado (Peru,1969–1975): -0.330
922° Marcos (Philippines,1966–1985): -0.337
923° Sayasone (Laos,2006–2010): -0.343
924° Ongania (Argentina,1967–1970): -0.344
925° Abacha (Nigeria,1994–1998): -0.348
926° Musharraf (Pakistan,2000–2008): -0.350
927° Hoyte (Guyana,1986–1992): -0.360
928° Medici (Brazil,1970–1973): -0.361
929° Noriega (Panama,1984–1989): -0.362
930° Rojas Pinillia (Colombia,1954–1956): -0.369
931° Jammeh (Gambia,1995–2010): -0.370
932° Kim Jong-Il (North Korea,1995-2010): -0.379
933° Mendez Manfredini (Uruguay,1977–1981): -0.392
934° Milosevic (Yugoslavia,1989–2000): -0.399
935° Ataturk (Turkey,1923–1938): -0.400
936° Suharto (Indonesia,1966–1997): -0.401
937° Gomez (Venezuela,1909–1935): -0.402
938° Rafel Trujillo (Dominican Republic,1931–1960): -0.404
939° Laval (France,1942–1944): -0.410
940° Costa de Silva (Brazil,1967–1969): -0.413
941° Bainimarama (Fiji,2007–2010): -0.414
942° Strasser (Sierra Leone,1992–1995): -0.415
943° Pinochet (Chile,1974–1989): -0.418
944° Alvarez Armalino (Uruguay,1982–1984): -0.452
945° Metaxas (Greece,1936–1940): -0.519
946° Castro (Cuba,1959–2010): -0.525
947° Mussolini (Italy,1923–1943): -0.582
948° Papadopoulos (Greece,1968–1973): -0.583
949° Salazar (Portugal,1933–1968): -0.603
950° Schuschnigg (Austria,1935–1937): -0.607
951° Franco (Spain,1939–1975): -0.618
952° Caetano (Portugal,1969–1973): -0.620
878° Shick Gutierrez (Nicaragua,1963–1966): -0.354
879° Milosevic (Yugoslavia,1989–2000): -0.357
880° Daniel Ortega (Nicaragua,1980–1989): -0.358
881° Ayala Eusebio (Paraguay,1933–1935): -0.359
882° Laugerud Garcia (Guatemala,1975–1978): -0.362
883° Laurent Kabila (Democratic Republic of Congo,1997–2000): -0.363
884° Ershad (Bangladesh,1982–1990): -0.370
885° Souvanna Phouma (Laos,1964–1975): -0.381
886° Garcia Perez (Peru,1986–1990): -0.385
887° Caetano (Portugal,1969–1973): -0.387
888° Burhanuddin Rabbani (Afghanistan,1993–1996): -0.387
889° Belaunde (Peru,1981–1985): -0.389
890° Kasavubu (Democratic Republic of Congo,1961–1965): -0.392
891° Ayatollah Khomeini (Iran,1979–1989): -0.394
892° Gemayel, Amin (Lebanon,1983–1988): -0.399
893° Sarkis (Lebanon,1977–1982): -0.407
894° Marcos (Philippines,1966–1985): -0.412
895° Saito, M. (Japan,1931–1934): -0.412
896° deKlerk (South Africa,1990–1993): -0.418
897° Kumaratunga (Sri Lanka,1995–2005): -0.428
898° Karmal (Afghanistan,1980–1985): -0.432
899° Namaliu (Papua New Guinea,1989–1992): -0.432
900° Johnson (United States,1964–1968): -0.442
901° Curtin (Australia,1942–1944): -0.442
902° Magana Borjo (El Salvador,1982–1984): -0.459
903° Chan (Papua New Guinea,1995–1997): -0.460
904° Mullah Omar (Afghanistan,1997–2001): -0.463
905° Anastasio Somoza Debayle (Nicaragua,1967–1979): -0.489
906° Strasser (Sierra Leone,1992–1995): -0.491
907° Menzies (Australia,1939–1941): -0.500
908° Videla (Argentina,1976–1980): -0.503
909° Quisling (Norway,1940–1944): -0.512
910° Duarte (El Salvador,1985–1989): -0.515
911° Zeroual (Algeria,1994–1998): -0.524
912° Mussolini (Italy,1923–1943): -0.532
913° de Quay (Netherlands,1959–1962): -0.536
914° Botha (South Africa,1979–1988): -0.540
915° Leoni (Venezuela,1964–1968): -0.549
916° Vorster (South Africa,1967–1978): -0.568
917° Caldera Rodriguez (Venezuela,1969–1973): -0.571
918° Betancourt (Venezuela,1959–1963): -0.596
919° Mengistu Marriam (Ethiopia,1977–1990): -0.647
920° Macias Nguema (Equatorial Guinea,1969–1979): -0.685
921° Tojo (Japan,1942–1944): -0.699

The table reports leaders' rank, leaders' names and leaders' effects on democracy and conflict of leaders of the first and last fifty leaders. The leader's country and the leader's years in power are reported between parentheses. The sample is restricted to leaders with tenure equal or longer than three years.

D Additional Tables

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	0.128	-0.797***	-0.322	-0.518*	-0.164	0.394	-0.409**	-0.611**
	(0.207)	(0.140)	(0.285)	(0.265)	(0.214)	(0.381)	(0.189)	(0.237)
Academic	0.088	-0.340	-0.561*	-0.403	0.063	-0.149	-0.202	-0.360
	(0.214)	(0.291)	(0.328)	(0.308)	(0.189)	(0.273)	(0.240)	(0.299)
Politician	0.463*	0.642***	0.206	0.651**	-0.031	0.346	0.467**	0.525**
	(0.239)	(0.180)	(0.330)	(0.273)	(0.249)	(0.370)	(0.222)	(0.264)
Tenure (x 10 years)	0.511	-0.089	-1.080***	-0.554	0.417	0.693	0.009	-0.397
	(0.364)	(0.215)	(0.404)	(0.379)	(0.272)	(0.426)	(0.253)	(0.329)
Tenure^2	-0.104	-0.082	0.193*	0.071	-0.231***	-0.075	-0.074	-0.007
	(0.093)	(0.055)	(0.106)	(0.101)	(0.070)	(0.107)	(0.065)	(0.087)
Entry age (x 10 years)	-0.171	0.198	-1.012**	-0.952*	0.083	-0.827	-0.606	-0.678
	(0.467)	(0.317)	(0.468)	(0.528)	(0.498)	(1.188)	(0.429)	(0.480)
Entry age^2	0.037	-0.018	0.084*	0.081	-0.008	0.077	0.058	0.058
	(0.045)	(0.031)	(0.042)	(0.049)	(0.048)	(0.123)	(0.040)	(0.044)
Observations	771	815	838	856	847	779	693	693
Adjusted R-squared	0.043	0.277	0.075	0.133	0.120	0.039	0.112	0.164

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D1: Leaders' effects and leaders' background.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader								
Military career	-0.001	-0.886***	-0.376	-0.701**	-0.231	-0.244	-0.640***	-0.685***
	(0.285)	(0.195)	(0.256)	(0.306)	(0.226)	(0.374)	(0.192)	(0.235)
Military education	0.159	-0.284	-0.188	-0.116	0.078	0.366	0.016	-0.213
	(0.299)	(0.179)	(0.281)	(0.262)	(0.231)	(0.473)	(0.232)	(0.241)
Academic								
Economist	-0.034	-0.549**	0.061	0.303	-0.478	0.642**	0.055	0.081
	(0.258)	(0.275)	(0.363)	(0.271)	(0.482)	(0.284)	(0.216)	(0.255)
Other academic	0.156	-0.229	-0.779**	-0.575*	0.219	-0.464*	-0.290	-0.506
	(0.253)	(0.354)	(0.368)	(0.328)	(0.251)	(0.275)	(0.285)	(0.336)
Politician								
Legislative career	-0.024	0.025	-0.168	0.415*	0.485	-0.094	0.222	0.269
	(0.404)	(0.270)	(0.286)	(0.248)	(0.339)	(0.329)	(0.193)	(0.244)
PM, VP or president	0.405*	0.587***	0.164	0.525**	0.035	-0.193	0.460***	0.551***
	(0.217)	(0.149)	(0.282)	(0.227)	(0.218)	(0.288)	(0.165)	(0.203)
Mayor or governor	-0.253	0.045	-0.031	0.616*	-0.502*	-0.406	0.010	0.132
	(0.336)	(0.354)	(0.416)	(0.356)	(0.276)	(0.382)	(0.289)	(0.332)
Party leader	0.311	0.305**	0.078	0.164	-0.312	0.090	0.162	0.221
	(0.267)	(0.135)	(0.344)	(0.296)	(0.229)	(0.565)	(0.226)	(0.289)
Minister	0.334	0.002	-0.033	0.100	-0.237	0.010	0.065	0.016
	(0.300)	(0.188)	(0.254)	(0.249)	(0.244)	(0.471)	(0.202)	(0.211)
Civil servant or diplomat	0.631	0.242	-0.250	-0.003	0.346	-0.471	0.082	-0.064
	(0.434)	(0.259)	(0.274)	(0.260)	(0.287)	(0.412)	(0.246)	(0.247)
Tenure (x 10 years)	0.575	-0.130	-1.111***	-0.626	0.443	0.772*	-0.023	-0.453
	(0.355)	(0.201)	(0.418)	(0.407)	(0.276)	(0.447)	(0.271)	(0.354)
Tenure^2	-0.123	-0.076	0.198*	0.088	-0.233***	-0.099	-0.067	0.005
	(0.089)	(0.050)	(0.108)	(0.109)	(0.071)	(0.110)	(0.069)	(0.092)
Entry age (x 10 years)	-0.109	0.604**	-0.854*	-0.746	0.183	-0.607	-0.399	-0.431
	(0.475)	(0.285)	(0.473)	(0.515)	(0.470)	(1.071)	(0.428)	(0.467)
Entry age^2	0.031	-0.055*	0.068	0.061	-0.014	0.059	0.038	0.034
	(0.046)	(0.028)	(0.042)	(0.048)	(0.045)	(0.109)	(0.039)	(0.042)
Observations	771	815	838	856	847	779	693	693
Adjusted R-squared	0.051	0.310	0.085	0.164	0.154	0.045	0.128	0.193

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D2: Leaders' effects and leaders' sub-categories.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military career	-0.461	-0.819***	-0.282	-0.492	-0.342	0.056	-0.594**	-0.595*
	(0.334)	(0.227)	(0.404)	(0.406)	(0.287)	(0.535)	(0.282)	(0.344)
Military education	-0.096	-0.160	0.144	0.475	-0.048	0.623	0.301	0.167
	(0.510)	(0.287)	(0.495)	(0.361)	(0.315)	(0.459)	(0.272)	(0.343)
Economist	0.002	-0.477	0.073	0.397	-0.442	0.525*	0.059	0.125
	(0.280)	(0.304)	(0.311)	(0.288)	(0.492)	(0.290)	(0.229)	(0.280)
Other academic	0.155	-0.217	-0.795**	-0.582*	0.228	-0.409	-0.296	-0.516
	(0.258)	(0.326)	(0.358)	(0.323)	(0.251)	(0.268)	(0.279)	(0.332)
Legislative career	-0.354	0.419	-0.176	0.486	0.488	-0.664	0.185	0.362
	(0.585)	(0.389)	(0.324)	(0.323)	(0.433)	(0.463)	(0.266)	(0.303)
PM, VP or president	0.129	0.608***	0.212	0.429	-0.068	0.400	0.451**	0.460
	(0.317)	(0.206)	(0.412)	(0.308)	(0.260)	(0.339)	(0.216)	(0.288)
Party leader	0.036	0.576***	0.300	0.334	-0.439	0.793	0.299	0.353
	(0.340)	(0.196)	(0.495)	(0.448)	(0.325)	(0.598)	(0.323)	(0.426)
Mayor or governor	-0.442	0.053	-0.015	0.555	-0.531*	-0.351	-0.025	0.077
	(0.360)	(0.362)	(0.445)	(0.390)	(0.284)	(0.414)	(0.317)	(0.373)
Civil servant or diplomat	0.627	0.254	-0.295	0.020	0.351	-0.559	0.105	-0.043
	(0.440)	(0.259)	(0.282)	(0.279)	(0.291)	(0.415)	(0.250)	(0.259)
Tenure (x 10 years)	0.542	-0.106	-1.195***	-0.725*	0.501*	0.465	-0.092	-0.495
	(0.349)	(0.207)	(0.410)	(0.393)	(0.273)	(0.450)	(0.272)	(0.344)
Tenure^2	-0.111	-0.079	0.214**	0.103	-0.245***	-0.036	-0.054	0.012
	(0.089)	(0.051)	(0.106)	(0.105)	(0.071)	(0.111)	(0.069)	(0.089)
Entry age (x 10 years)	-0.114	0.661**	-0.752	-0.671	0.165	-0.804	-0.366	-0.351
	(0.451)	(0.263)	(0.480)	(0.538)	(0.448)	(0.897)	(0.431)	(0.484)
Entry age^2	0.032	-0.061**	0.057	0.053	-0.012	0.079	0.035	0.026
	(0.044)	(0.026)	(0.043)	(0.050)	(0.042)	(0.088)	(0.040)	(0.044)
Interactions								
Military career * Military education	0.327	-0.274	-0.509	-1.076**	0.146	-0.482	-0.478	-0.666
	(0.522)	(0.358)	(0.540)	(0.452)	(0.390)	(0.513)	(0.348)	(0.419)
Military career * PM, VP or president	0.618	-0.158	0.608	0.592	-0.174	0.348	0.369	0.446
	(0.415)	(0.382)	(0.508)	(0.530)	(0.447)	(0.641)	(0.338)	(0.445)
Military career * Minister	1.054**	0.839**	-0.054	0.992*	0.524	-1.032*	0.477	0.659
	(0.482)	(0.353)	(0.626)	(0.558)	(0.375)	(0.578)	(0.389)	(0.472)
Party leader * PM, VP or president	0.282	-0.159	-0.950	-0.536	0.604	-3.272**	-0.694	-0.394
	(0.558)	(0.369)	(0.804)	(0.648)	(0.491)	(1.342)	(0.531)	(0.660)
Party leader * Legislative career	0.591	-0.957***	-0.103	-0.371	-0.028	0.798	-0.109	-0.403
	(0.643)	(0.348)	(0.437)	(0.429)	(0.462)	(0.842)	(0.390)	(0.395)
Observations	771	815	838	856	847	779	693	693
Adjusted R-squared	0.064	0.328	0.100	0.191	0.160	0.159	0.137	0.203

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D3: Leaders' effects and leaders' sub-categories with interactions.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Graduate	0.672*	-0.438	-0.355	-0.465	0.296	-0.606	-0.456	-0.649$^{\gamma}$
	(0.375)	(0.334)	(0.376)	(0.495)	(0.381)	(0.501)	(0.329)	(0.395)
Tenure (x 10 years)	0.507	0.232	-0.010	0.148	0.592	-0.564	0.270	0.326
	(0.833)	(0.748)	(0.810)	(0.741)	(0.591)	(0.498)	(0.534)	(0.675)
Tenure^2	-0.124	-0.166	-0.029	-0.043	-0.215	0.147	-0.115	-0.134
	(0.191)	(0.186)	(0.239)	(0.222)	(0.151)	(0.119)	(0.151)	(0.203)
Entry age (x 10 years)	0.416	0.333	0.157	0.025	-0.769	-0.941	-0.219	-0.089
	(0.844)	(0.473)	(0.539)	(0.719)	(0.879)	(1.244)	(0.544)	(0.646)
Entry age^2	-0.026	-0.035	-0.013	-0.003	0.071	0.123	0.026	0.009
	(0.088)	(0.052)	(0.050)	(0.068)	(0.082)	(0.143)	(0.055)	(0.061)
Constant	-1.918	-1.066	-0.214	-0.294	1.165	2.420	0.238	-0.059
	(2.253)	(1.290)	(1.700)	(1.944)	(2.396)	(2.642)	(1.407)	(1.821)
Observations	127	136	144	147	145	141	117	117
Adjusted R-squared	0.031	0.074	-0.009	-0.013	0.041	0.084	0.015	0.029

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1, $^{\gamma}$ p = 0.106

Table D4: Leaders' effects and graduate education

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Degree in law	0.416	-0.216	-0.347	-0.127	0.447***	0.100	0.022	-0.099
	(0.301)	(0.185)	(0.317)	(0.298)	(0.165)	(0.332)	(0.197)	(0.256)
Degree in economics	-0.079	-0.213	0.208	0.365	-0.045	0.592	0.197	0.212
	(0.469)	(0.204)	(0.362)	(0.301)	(0.337)	(0.368)	(0.234)	(0.247)
Degree in pol. science	-0.462	-0.033	-0.784*	-0.183	0.359	0.536	-0.027	-0.204
	(0.374)	(0.242)	(0.453)	(0.276)	(0.427)	(0.542)	(0.265)	(0.267)
Other degree	-0.044	-0.021	-0.128	-0.010	0.643**	-0.094	-0.009	-0.064
	(0.349)	(0.226)	(0.386)	(0.294)	(0.246)	(0.425)	(0.210)	(0.258)
Military education	0.448	-0.595***	-0.599	-0.413	0.332	1.094**	-0.139	-0.527*
	(0.311)	(0.185)	(0.377)	(0.313)	(0.270)	(0.511)	(0.244)	(0.280)
Years of experience	0.013	0.018	0.039	0.063**	0.009	0.131***	0.061***	0.060**
	(0.027)	(0.020)	(0.031)	(0.030)	(0.023)	(0.033)	(0.023)	(0.027)
Years of experience^2	-0.000	-0.000	-0.001	-0.001*	-0.001	-0.004***	-0.002***	-0.001**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Constraint	-0.176	1.280***	0.139	0.823**	0.619**	0.196	0.640***	0.783***
	(0.245)	(0.243)	(0.257)	(0.357)	(0.297)	(0.255)	(0.232)	(0.284)
Tenure (x 10 years)	0.063	0.099	-1.153**	-0.484	0.617**	0.192	-0.034	-0.296
	(0.359)	(0.229)	(0.475)	(0.459)	(0.305)	(0.436)	(0.311)	(0.382)
Tenure^2	-0.013	-0.092*	0.215*	0.085	-0.252***	0.056	-0.047	-0.004
	(0.083)	(0.055)	(0.124)	(0.112)	(0.073)	(0.108)	(0.073)	(0.094)
Entry age (x 10 years)	0.478	0.038	-1.321**	-1.186*	-0.152	-1.298	-0.719*	-0.838
	(0.455)	(0.381)	(0.531)	(0.601)	(0.437)	(0.814)	(0.432)	(0.508)
Entry age^2	-0.026	-0.002	0.119**	0.104*	0.022	0.138*	0.075*	0.077
	(0.048)	(0.038)	(0.051)	(0.057)	(0.045)	(0.079)	(0.041)	(0.048)
Observations	626	652	659	673	665	631	585	585
Adjusted R-squared	0.047	0.410	0.127	0.231	0.226	0.136	0.198	0.275

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D5: Education, constraints or experience? - Alternative measure of experience

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. Definition of independent variables are detailed in Appendix A. Other degree equals one if university degree is coded one, and economic, law, political sciance and military education is coded 0. Years of experience is taken from Baturo (2016) and accounts for years in official politics, such as being a member of parliament, governor or city mayor, among others. Constraint equals one if the Polity IV Executive Constraints is higher or equal than 4 the year before the leader enters office. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	Full sample		Restricted sample	
	(1)	(2)	(3)	(4)
	Previous years of experience	Constraints	Previous years of experience	Constraints
Military leader	-2.650***	-0.270***	-2.553***	-0.301***
	(0.839)	(0.046)	(0.950)	(0.049)
Politician	5.588***	0.282***	6.388***	0.262***
	(0.898)	(0.043)	(0.981)	(0.046)
Academic	-2.813***	0.090*	-2.794**	0.071
	(0.881)	(0.048)	(1.128)	(0.055)
Tenure (x 10 years)	0.423	-0.312***	0.903	-0.296***
	(1.096)	(0.071)	(1.243)	(0.081)
Tenure^2	-0.005	0.047**	-0.216	0.045**
	(0.263)	(0.019)	(0.283)	(0.022)
Entry age (x 10 years)	0.828	-0.022	-1.589	0.014
	(2.307)	(0.086)	(2.361)	(0.108)
Entry age^2	0.325	0.006	0.544**	0.005
	(0.237)	(0.008)	(0.243)	(0.010)
Observations	847	849	637	642
Adjusted R-squared	0.330	0.374	0.354	0.379
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table D6: Experience, constraints and leaders' type.

OLS estimators. Columns (1) and (2) use the full sample of leaders without missing information, while columns (3) and (4) restricts to the sample of leaders with tenure equal to or longer than three years. Years of experience is taken from Baturo (2016) and includes years in formal politics that accounts for years in official politics, and political activity such as party membership or civil service offices. Constraints is coded one if the index Polity IV Executive Constraints from Polity IV is higher or equal than 4. Standard errors are clustered at the country level.

	(1) Education	(2) Experience	(3) Constraints	(4) All
Military leader	-0.657**	-1.260***	-0.215	-0.936*
	(0.297)	(0.385)	(0.236)	(0.516)
Academic	-0.286	-0.474	-0.291	-0.825
	(0.291)	(0.527)	(0.270)	(0.518)
Politician	0.136	0.210	0.418	-0.305
	(0.356)	(0.454)	(0.274)	(0.560)
Graduate	-0.798**			-0.962**
	(0.399)			(0.380)
Military leader*Graduate	0.078			0.194
	(0.420)			(0.411)
Politician*Graduate	0.541			0.644
	(0.403)			(0.393)
Years of exper.		-0.049		-0.056
		(0.044)		(0.043)
Years of exper.^{2}		0.002*		0.002**
		(0.001)		(0.001)
Military leader*Years of exper.		0.062		0.066
		(0.039)		(0.045)
Military leader**Years of exper.^{2}		-0.001		-0.001
		(0.001)		(0.001)
Academic*Years of exper.		0.048		0.097*
		(0.060)		(0.058)
Academic*Years of exper.^{2}		-0.002		-0.002*
		(0.001)		(0.001)
Politician*Years of exper.		0.067		0.073
		(0.048)		(0.053)
Politician*Years of exper.^{2}		-0.002**		-0.002**
		(0.001)		(0.001)
Constraint			0.881	1.319***
			(0.563)	(0.474)
Military leader*Constraints			-0.333	-0.387
			(0.642)	(0.780)
Politician*Constraints			-0.156	-0.628
			(0.512)	(0.423)
Tenure (x 10 years)	-0.495	-0.289	-0.515	-0.484
	(0.318)	(0.332)	(0.381)	(0.375)
Tenure^2	0.011	-0.020	0.027	0.029
	(0.080)	(0.087)	(0.095)	(0.088)
Entry age (x 10 years)	-0.503	-0.547	-0.765	-0.606
	(0.454)	(0.534)	(0.471)	(0.529)
Entry age^2	0.044	0.038	0.067	0.048
	(0.042)	(0.052)	(0.042)	(0.052)
Observations	693	637	635	585
Adjusted R-squared	0.180	0.235	0.211	0.315
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Table D7: Heterogenous effects using the PCA index.

WLS estimators. The dependent variable is the PCA (Principal Component Analysis) index which is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A.Years of experience is taken from Baturo (2016) and includes years in formal politics that accounts for years in official politics, and political activity such as party membership or civil service offices. Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	0.354*	-0.549***	-0.297	-0.217	0.040	0.600	-0.222	-0.373
	(0.209)	(0.148)	(0.296)	(0.310)	(0.223)	(0.407)	(0.215)	(0.282)
Politician	0.554**	0.494***	0.167	0.623**	-0.105	0.446	0.433*	0.462
	(0.265)	(0.184)	(0.353)	(0.297)	(0.233)	(0.377)	(0.238)	(0.289)
Academic	0.237	-0.295	-0.398	-0.294	-0.003	-0.069	-0.127	-0.258
	(0.195)	(0.245)	(0.321)	(0.289)	(0.193)	(0.293)	(0.216)	(0.266)
Tenure (x 10 years)	0.299	0.055	-1.400***	-0.774*	0.349	0.656	-0.099	-0.516
	(0.349)	(0.219)	(0.468)	(0.402)	(0.315)	(0.401)	(0.293)	(0.365)
Tenure^2	-0.046	-0.111*	0.245**	0.121	-0.213***	-0.046	-0.052	0.017
	(0.084)	(0.061)	(0.122)	(0.104)	(0.080)	(0.101)	(0.069)	(0.092)
Entry age (x 10 years)	0.022	-0.199	-1.364**	-1.172**	-0.008	-0.342	-0.631	-0.821
	(0.466)	(0.347)	(0.540)	(0.558)	(0.443)	(1.261)	(0.453)	(0.514)
Entry age^2	0.016	0.017	0.121**	0.104**	-0.001	0.034	0.061	0.073
	(0.045)	(0.032)	(0.049)	(0.051)	(0.045)	(0.132)	(0.042)	(0.046)
Initial level of democracy	-0.629	1.593***	0.256	1.100*	0.032	-0.442	0.410	0.952**
	(0.382)	(0.322)	(0.486)	(0.567)	(0.362)	(0.450)	(0.371)	(0.479)
Initial property rights	1.243**	-1.157***	-0.656	-0.871*	1.609***	1.022**	0.201	-0.526
	(0.480)	(0.256)	(0.413)	(0.475)	(0.288)	(0.461)	(0.301)	(0.388)
Constant	-1.634	0.229	4.839***	3.122**	-0.853	-1.065	1.002	2.104
	(1.134)	(0.864)	(1.486)	(1.490)	(1.079)	(3.045)	(1.247)	(1.402)
Observations	692	737	737	755	746	688	638	638
Adjusted R-squared	0.073	0.381	0.100	0.180	0.238	0.049	0.139	0.208

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D8: Leaders' effects and leaders' background when controlling for initial democracy and property rights.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader								
Military career	-0.039	-0.531**	-0.366	-0.544	-0.007	-0.275	-0.535**	-0.507*
	(0.315)	(0.209)	(0.302)	(0.344)	(0.218)	(0.394)	(0.235)	(0.279)
Military education	0.309	-0.281	-0.139	0.041	0.035	0.512	0.082	-0.151
	(0.313)	(0.218)	(0.320)	(0.320)	(0.215)	(0.507)	(0.253)	(0.273)
Academic								
Economist	0.043	-0.581**	0.035	0.314	-0.537	0.697**	0.044	0.061
	(0.241)	(0.272)	(0.358)	(0.285)	(0.381)	(0.293)	(0.206)	(0.253)
Other academic	0.291	-0.162	-0.551	-0.444	0.110	-0.411	-0.205	-0.384
	(0.227)	(0.296)	(0.362)	(0.306)	(0.254)	(0.303)	(0.261)	(0.306)
Politician								
Legislative career	-0.090	-0.074	-0.104	0.457	0.301	-0.147	0.170	0.247
	(0.425)	(0.267)	(0.296)	(0.285)	(0.338)	(0.314)	(0.199)	(0.265)
PM, VP or president	0.586***	0.463***	0.040	0.486*	0.052	-0.268	0.476***	0.528**
	(0.190)	(0.135)	(0.301)	(0.252)	(0.220)	(0.334)	(0.175)	(0.215)
Mayor or governor	-0.165	0.107	0.056	0.731**	-0.573**	-0.522	0.012	0.161
	(0.280)	(0.297)	(0.396)	(0.354)	(0.285)	(0.456)	(0.285)	(0.332)
Party leader	0.126	0.171	0.149	0.137	-0.583**	0.152	0.063	0.132
	(0.254)	(0.133)	(0.353)	(0.299)	(0.246)	(0.599)	(0.234)	(0.292)
Minister	0.438	0.039	0.020	0.196	-0.215	0.025	0.086	0.060
	(0.326)	(0.171)	(0.259)	(0.231)	(0.238)	(0.451)	(0.195)	(0.199)
Civil servant or diplomat	0.664	0.251	-0.396	-0.094	0.446*	-0.420	0.036	-0.161
	(0.453)	(0.234)	(0.288)	(0.283)	(0.265)	(0.405)	(0.258)	(0.245)
Tenure (x 10 years)	0.375	0.086	-1.416***	-0.836*	0.434	0.794*	-0.107	-0.554
	(0.344)	(0.215)	(0.470)	(0.426)	(0.305)	(0.457)	(0.304)	(0.377)
Tenure^2	-0.063	-0.118**	0.246**	0.134	-0.228***	-0.091	-0.052	0.024
	(0.081)	(0.057)	(0.121)	(0.110)	(0.076)	(0.111)	(0.072)	(0.094)
Entry age (x 10 years)	0.021	0.046	-1.192**	-1.004*	-0.051	-0.109	-0.483	-0.616
	(0.470)	(0.333)	(0.546)	(0.536)	(0.422)	(1.082)	(0.450)	(0.501)
Entry age^2	0.015	-0.006	0.104**	0.089*	0.005	0.015	0.046	0.053
	(0.046)	(0.031)	(0.049)	(0.049)	(0.043)	(0.112)	(0.041)	(0.044)
Initial level of democracy	-0.493	1.563***	0.147	0.903*	0.171	-0.442	0.354	0.801*
	(0.404)	(0.318)	(0.509)	(0.545)	(0.365)	(0.505)	(0.376)	(0.476)
Initial property rights	1.153**	-0.990***	-0.598	-0.848*	1.658***	0.891**	0.253	-0.449
	(0.494)	(0.237)	(0.409)	(0.471)	(0.256)	(0.428)	(0.299)	(0.382)
Constant	-1.506	-0.257	4.615***	3.048**	-0.891	-1.138	0.871	1.879
	(1.128)	(0.842)	(1.481)	(1.472)	(1.071)	(2.549)	(1.255)	(1.400)
Observations	692	737	737	755	746	688	638	638
Adjusted R-squared	0.093	0.391	0.104	0.195	0.278	0.053	0.148	0.221

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D9: Leaders' effects and leaders' background when controlling for initial democracy and property rights.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	0.453**	-0.672***	-0.193	-0.369*	-0.389**	0.355	-0.243	-0.559**
	(0.175)	(0.202)	(0.234)	(0.208)	(0.176)	(0.303)	(0.215)	(0.241)
Academic	0.544**	0.219	0.432*	0.475	0.212	0.089	0.457	0.492
	(0.224)	(0.521)	(0.227)	(0.349)	(0.418)	(0.186)	(0.576)	(0.573)
Politician	0.247	0.175	0.253	0.390*	0.101	0.550**	0.507**	0.326
	(0.257)	(0.222)	(0.222)	(0.211)	(0.186)	(0.234)	(0.251)	(0.268)
Tenure (x 10 years)	0.161	-0.411	-0.327	-0.206	-0.228	-0.022	-0.244	-0.361
	(0.300)	(0.287)	(0.324)	(0.245)	(0.205)	(0.191)	(0.267)	(0.319)
Tenure^2	-0.033	0.060	0.044	0.031	0.023	-0.003	0.007	0.040
	(0.065)	(0.072)	(0.087)	(0.066)	(0.051)	(0.045)	(0.069)	(0.089)
Entry age (x 10 years)	0.039	0.403	0.041	-0.274	-0.485	-0.581	-0.550	-0.216
	(0.565)	(0.458)	(0.318)	(0.341)	(0.377)	(0.383)	(0.539)	(0.706)
Entry age^2	0.012	-0.041	-0.014	0.017	0.039	0.058	0.044	0.009
	(0.056)	(0.042)	(0.027)	(0.031)	(0.034)	(0.042)	(0.049)	(0.061)
Constant	-1.047	-0.499	0.421	0.945	1.559	1.012	1.511	0.981
	(1.397)	(1.263)	(0.905)	(0.928)	(0.970)	(0.744)	(1.430)	(1.937)
Observations	124	131	138	137	138	133	120	116
Adjusted R-squared	0.040	0.139	0.047	0.095	0.051	0.024	0.087	0.109

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D10: Leaders' effects and leaders' background using exogenous transitions.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. The sample is restricted to leaders who died in office by natural death, or resigned due to health issues, and their successors conditional on having had a tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Graduate	0.382*	-0.090	-0.140	-0.075	0.153	-0.038	0.037	-0.148
	(0.210)	(0.197)	(0.189)	(0.196)	(0.187)	(0.171)	(0.229)	(0.228)
Tenure (x 10 years)	0.118	-0.208	0.037	0.064	0.284	-0.075	-0.054	0.043
	(0.344)	(0.318)	(0.290)	(0.263)	(0.265)	(0.179)	(0.305)	(0.314)
Tenure^2	-0.031	0.018	-0.027	-0.021	-0.094	0.026	-0.033	-0.042
	(0.076)	(0.083)	(0.084)	(0.077)	(0.065)	(0.039)	(0.077)	(0.089)
Entry age (x 10 years)	-0.084	0.511	0.065	0.036	-0.224	-0.272	-0.104	0.121
	(0.451)	(0.354)	(0.236)	(0.301)	(0.375)	(0.370)	(0.454)	(0.482)
Entry age^2	0.019	-0.046	-0.005	-0.002	0.019	0.036	0.009	-0.015
	(0.047)	(0.035)	(0.023)	(0.029)	(0.035)	(0.042)	(0.044)	(0.044)
Constant	-0.315	-1.274	-0.078	-0.181	0.304	0.598	0.327	-0.307
	(1.134)	(0.953)	(0.696)	(0.845)	(1.009)	(0.742)	(1.202)	(1.338)
Observations	127	136	144	147	145	141	117	117
R-squared	0.043	0.012	0.029	-0.033	0.023	0.018	0.032	0.019

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D11: Leaders' effects and education using exogenous transitions.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. The sample is restricted to leaders who died in office by natural death, or resigned due to health issues, and their successors conditional on having had a tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	0.121	-0.859***	-0.488	-0.784***	-0.348	0.571	-0.513**	-0.776***
	(0.235)	(0.155)	(0.311)	(0.270)	(0.230)	(0.415)	(0.198)	(0.252)
Politician	0.188	0.747***	0.353	0.730**	0.030	0.324	0.525**	0.672**
	(0.258)	(0.177)	(0.343)	(0.288)	(0.328)	(0.355)	(0.234)	(0.281)
Academic	0.082	-0.220	-0.372	-0.206	0.120	-0.013	-0.010	-0.127
	(0.219)	(0.243)	(0.315)	(0.317)	(0.198)	(0.295)	(0.221)	(0.291)
Tenure (x 10 years)	0.774	-0.349	-0.803	-0.697	-0.484	0.051	-0.166	-0.473
	(0.471)	(0.373)	(0.496)	(0.498)	(0.356)	(0.620)	(0.371)	(0.469)
Tenure^2	-0.240*	0.073	0.123	0.158	0.127	0.113	0.009	0.061
	(0.125)	(0.112)	(0.139)	(0.145)	(0.107)	(0.183)	(0.103)	(0.135)
Entry age (x 10 years)	0.350	0.512	-1.254**	-1.203**	0.598	-0.199	-0.320	-0.557
	(0.473)	(0.373)	(0.543)	(0.546)	(0.454)	(1.409)	(0.432)	(0.457)
Entry age^2	-0.016	-0.050	0.111**	0.108**	-0.051	0.025	0.036	0.051
	(0.046)	(0.037)	(0.050)	(0.053)	(0.044)	(0.147)	(0.041)	(0.043)
Observations	634	661	682	698	690	622	557	557
Adjusted R-squared	0.025	0.219	0.087	0.188	0.027	0.026	0.121	0.193

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D12: Leaders' effects and leaders' background after 1960.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader								
Military career	0.135	-0.832***	-0.610	-1.083***	-0.547*	-0.350	-0.860***	-0.923***
	(0.406)	(0.258)	(0.378)	(0.331)	(0.297)	(0.499)	(0.264)	(0.302)
Military education	0.082	-0.397	-0.183	0.029	0.263	0.765	0.159	-0.151
	(0.406)	(0.269)	(0.386)	(0.317)	(0.350)	(0.656)	(0.289)	(0.291)
Academic								
Economist	0.020	-0.533*	0.082	0.351	-0.496	0.696**	0.116	0.142
	(0.274)	(0.281)	(0.359)	(0.273)	(0.507)	(0.293)	(0.212)	(0.243)
Other academic	0.125	-0.093	-0.548	-0.342	0.305	-0.330	-0.063	-0.251
	(0.258)	(0.314)	(0.370)	(0.356)	(0.267)	(0.285)	(0.284)	(0.357)
Politician								
Legislative career	-0.173	-0.016	0.040	0.581**	0.527	-0.221	0.293	0.418*
	(0.420)	(0.271)	(0.295)	(0.255)	(0.368)	(0.358)	(0.193)	(0.251)
PM, VP or president	0.315	0.597***	0.213	0.492**	-0.006	-0.128	0.502***	0.588***
	(0.243)	(0.155)	(0.302)	(0.226)	(0.253)	(0.339)	(0.181)	(0.217)
Mayor or governor	-0.458	-0.051	0.005	0.694*	-0.475	-0.139	0.036	0.181
	(0.365)	(0.399)	(0.429)	(0.397)	(0.308)	(0.414)	(0.320)	(0.375)
Party leader	0.250	0.344**	-0.068	0.106	-0.377	0.081	0.107	0.180
	(0.273)	(0.140)	(0.368)	(0.326)	(0.246)	(0.678)	(0.237)	(0.320)
Minister	0.144	0.066	0.116	0.176	-0.053	-0.230	0.113	0.141
	(0.319)	(0.171)	(0.267)	(0.268)	(0.314)	(0.488)	(0.199)	(0.215)
Civil servant or diplomat	0.552	0.282	-0.130	0.076	0.197	-0.744*	0.035	-0.009
	(0.375)	(0.271)	(0.298)	(0.276)	(0.321)	(0.435)	(0.254)	(0.270)
Tenure (x 10 years)	0.848*	-0.302	-0.850*	-0.779*	-0.438	0.069	-0.262	-0.581
	(0.457)	(0.339)	(0.488)	(0.469)	(0.337)	(0.650)	(0.366)	(0.464)
Tenure^2	-0.269**	0.047	0.132	0.174	0.111	0.101	0.030	0.091
	(0.124)	(0.103)	(0.135)	(0.128)	(0.099)	(0.190)	(0.099)	(0.130)
Entry age (x 10 years)	0.382	0.919***	-1.129**	-1.085*	0.648	0.092	-0.163	-0.319
	(0.481)	(0.347)	(0.566)	(0.554)	(0.468)	(1.251)	(0.449)	(0.469)
Entry age^2	-0.021	-0.087**	0.100*	0.097*	-0.051	-0.002	0.022	0.030
	(0.047)	(0.034)	(0.052)	(0.053)	(0.046)	(0.129)	(0.042)	(0.044)
Constant	-1.951	-1.940**	3.764**	3.239**	-1.572	-1.034	0.279	1.106
	(1.193)	(0.914)	(1.588)	(1.572)	(1.227)	(2.899)	(1.257)	(1.360)
Observations	634	661	682	698	690	622	557	557
Adjusted R-squared	0.042	0.241	0.095	0.225	0.072	0.042	0.137	0.216

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D13: Leaders' effects and leaders' sub-categories after 1960.

WLS estimators. Dependent variables are the leaders' effects estimated in Section 4. Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Standard errors are clustered at the country level.

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	0.106	-0.370***	-0.088	-0.205**	-0.020	0.083	-0.206**	-0.304***
	(0.082)	(0.077)	(0.083)	(0.083)	(0.088)	(0.105)	(0.104)	(0.097)
Politician	0.181**	0.324***	0.125	0.268***	0.016	0.073	0.313***	0.310***
	(0.087)	(0.084)	(0.091)	(0.085)	(0.097)	(0.107)	(0.107)	(0.108)
Academic	0.056	-0.016	-0.122	-0.113	0.047	-0.126	-0.093	-0.130
	(0.088)	(0.102)	(0.105)	(0.099)	(0.101)	(0.105)	(0.119)	(0.128)
Tenure (x 10 years)	0.259*	-0.288**	-0.238*	-0.160	0.253	0.170	0.031	-0.124
	(0.139)	(0.143)	(0.136)	(0.141)	(0.191)	(0.134)	(0.162)	(0.166)
Tenure^2	-0.057*	0.016	0.030	0.007	-0.104*	-0.009	-0.049	-0.027
	(0.033)	(0.044)	(0.041)	(0.044)	(0.062)	(0.033)	(0.046)	(0.050)
Entry age (x 10 years)	-0.043	0.041	-0.261	-0.314	0.178	-0.270	-0.258	-0.266
	(0.217)	(0.191)	(0.203)	(0.204)	(0.206)	(0.251)	(0.282)	(0.291)
Entry age^2	0.011	-0.001	0.024	0.029	-0.016	0.030	0.029	0.026
	(0.020)	(0.018)	(0.018)	(0.019)	(0.019)	(0.024)	(0.026)	(0.026)
Constant	-0.415	0.115	0.896	0.897	-0.515	0.266	0.426	0.698
	(0.585)	(0.509)	(0.548)	(0.562)	(0.549)	(0.670)	(0.790)	(0.810)
Observations	771	815	838	856	847	779	693	693
Adjusted R-squared	0.010	0.148	0.014	0.055	0.019	0.008	0.063	0.089

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D14: Leaders' effects and leaders' background with bootstrap standard errors.

OLS estimates with bootsrapped standard errors calculated with 1,000 repetitions. Dependent variables are the leaders' effects estimated in Section 4. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F).

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader								
Military career	0.024	-0.417***	-0.159	-0.368***	-0.071	-0.004	-0.382***	-0.438***
	(0.115)	(0.100)	(0.104)	(0.097)	(0.110)	(0.123)	(0.132)	(0.118)
Military education	0.097	-0.135	-0.048	0.001	0.036	0.083	0.033	-0.056
	(0.110)	(0.101)	(0.106)	(0.097)	(0.108)	(0.123)	(0.129)	(0.117)
Academic								
Economist	-0.013	-0.187	0.125	0.121	-0.172	0.115	0.004	-0.005
	(0.128)	(0.142)	(0.142)	(0.113)	(0.177)	(0.121)	(0.143)	(0.151)
Other academic	0.086	0.059	-0.236*	-0.221*	0.132	-0.225*	-0.133	-0.190
	(0.099)	(0.130)	(0.132)	(0.127)	(0.110)	(0.136)	(0.153)	(0.166)
Politician								
Legislative career	0.072	0.043	-0.049	0.061	0.176*	-0.077	0.051	0.050
	(0.111)	(0.098)	(0.087)	(0.084)	(0.096)	(0.119)	(0.104)	(0.106)
PM, VP or president	0.123	0.237***	0.110	0.167**	-0.005	0.041	0.248**	0.251**
	(0.089)	(0.075)	(0.088)	(0.077)	(0.085)	(0.112)	(0.102)	(0.098)
Mayor or governor	0.037	0.074	0.046	0.180	-0.250*	-0.100	0.048	0.061
	(0.139)	(0.134)	(0.135)	(0.114)	(0.144)	(0.219)	(0.164)	(0.151)
Party leader	0.060	0.174**	0.070	0.101	-0.103	0.138	0.174*	0.188*
	(0.091)	(0.078)	(0.081)	(0.076)	(0.079)	(0.106)	(0.101)	(0.100)
Minister	0.188*	0.025	-0.030	0.016	-0.102	0.038	0.033	-0.007
	(0.097)	(0.087)	(0.079)	(0.079)	(0.086)	(0.106)	(0.101)	(0.098)
Civil servant or diplomat	0.216	0.115	-0.106	-0.075	0.092	-0.211	0.014	-0.048
	(0.136)	(0.154)	(0.112)	(0.117)	(0.116)	(0.169)	(0.159)	(0.147)
Tenure (x 10 years)	0.271**	-0.304**	-0.257*	-0.177	0.257	0.175	0.016	-0.143
	(0.135)	(0.145)	(0.136)	(0.142)	(0.188)	(0.140)	(0.171)	(0.168)
Tenure^2	-0.059*	0.017	0.033	0.010	-0.105*	-0.010	-0.048	-0.025
	(0.033)	(0.045)	(0.040)	(0.043)	(0.060)	(0.034)	(0.049)	(0.051)
Entry age (x 10 years)	-0.038	0.196	-0.198	-0.192	0.221	-0.206	-0.131	-0.132
	(0.209)	(0.203)	(0.207)	(0.217)	(0.222)	(0.254)	(0.290)	(0.278)
Entry age^2	0.011	-0.016	0.017	0.018	-0.019	0.024	0.016	0.012
	(0.020)	(0.019)	(0.019)	(0.020)	(0.021)	(0.024)	(0.026)	(0.025)
Observations	771	815	838	856	847	779	693	693
Adjusted R-squared	0.005	0.156	0.017	0.063	0.026	0.008	0.064	0.100

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D15: Leaders' effects and leaders' sub-categories - bootsrapped standard errors.

OLS estimates with bootsrapped standard errors calculated with 1,000 repetitions. Dependent variables are the leaders' effects estimated in Section 4. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories are detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F).

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader	-0.007	-0.071***	0.005	-0.099***	0.006	0.005	-0.012	-0.018*
	(0.008)	(0.023)	(0.031)	(0.035)	(0.021)	(0.018)	(0.008)	(0.010)
Politician	0.006	0.092***	-0.024	0.094***	0.022	-0.033*	0.012	0.013
	(0.008)	(0.021)	(0.030)	(0.033)	(0.022)	(0.018)	(0.008)	(0.010)
Academic	0.137***	-0.010	0.020	-0.094**	-0.024	0.005	-0.010	-0.017
	(0.036)	(0.042)	(0.036)	(0.041)	(0.027)	(0.020)	(0.010)	(0.013)
Tenure (x 10 years)	-0.028	-0.090**	-0.041	-0.000	-0.007	0.042*	0.007	-0.012
	(0.019)	(0.040)	(0.044)	(0.048)	(0.030)	(0.025)	(0.012)	(0.015)
Tenure^2	0.006	0.015	0.016	-0.010	-0.005	-0.003	-0.005	-0.001
	(0.005)	(0.011)	(0.011)	(0.013)	(0.007)	(0.006)	(0.003)	(0.003)
Entry age (x 10 years)	-0.065*	-0.026	0.081	-0.093	-0.048	-0.010	-0.052**	-0.012
	(0.040)	(0.066)	(0.072)	(0.077)	(0.052)	(0.030)	(0.025)	(0.023)
Entry age^2	0.007*	0.003	-0.008	0.008	0.005	0.002	0.005**	0.001
	(0.004)	(0.006)	(0.007)	(0.007)	(0.005)	(0.003)	(0.002)	(0.002)
Observations	771	815	838	856	847	779	693	693

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D16: Leaders' background and the probability of being a "good" and significant leader

Marginal effects on the probability of a leader having a positive and significant effect. Those are post-estimations of an ordered probit with three outcomes: having a negative and significant effect; having a non-significant effect and having a significant and positive one. I restrict the sample to leaders with tenure equal or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F).

	(1) Growth	(2) Democracy	(3) Corruption	(4) Rule of law	(5) Property rights	(6) Conflict	(7) Additive index	(8) PCA index
Military leader								
Military career	-0.007	-0.074**	-0.042	-0.084**	-0.009	-0.009	-0.014	-0.025**
	(0.013)	(0.029)	(0.035)	(0.039)	(0.027)	(0.015)	(0.010)	(0.012)
Military education	0.007	-0.020	0.040	-0.073**	0.008	0.025*	-0.002	0.005
	(0.015)	(0.028)	(0.035)	(0.034)	(0.033)	(0.015)	(0.009)	(0.011)
Academic								
Economist	0.132***	-0.027	0.049	0.009	0.022	-0.242***	0.002	-0.005
	(0.035)	(0.059)	(0.050)	(0.073)	(0.053)	(0.048)	(0.005)	(0.006)
Other academic	0.139***	-0.001	0.010	-0.143***	-0.040	0.021	-0.013	-0.019
	(0.035)	(0.044)	(0.045)	(0.042)	(0.029)	(0.021)	(0.012)	(0.016)
Politician								
Legislative career	-0.001	0.101**	-0.123**	0.089	0.054	-0.274***	0.003	-0.000
	(0.017)	(0.050)	(0.050)	(0.057)	(0.037)	(0.055)	(0.006)	(0.009)
PM, VP or president	0.024*	0.064**	-0.007	0.039	0.004	-0.028	0.021***	0.015*
	(0.014)	(0.027)	(0.025)	(0.035)	(0.023)	(0.019)	(0.008)	(0.008)
Mayor or governor	-0.003	0.065	0.008	0.072	-0.035	-0.009	-0.011	0.003
	(0.016)	(0.056)	(0.053)	(0.066)	(0.031)	(0.032)	(0.013)	(0.017)
Party leader	0.007	0.060	0.006	0.045	-0.000	0.005	0.004	0.009
	(0.014)	(0.037)	(0.034)	(0.039)	(0.028)	(0.021)	(0.006)	(0.007)
Minister	0.007	0.043	-0.045	0.080*	-0.000	-0.035	0.000	0.000
	(0.012)	(0.030)	(0.034)	(0.043)	(0.024)	(0.022)	(0.007)	(0.009)
Civil servant or diplomat	0.137***	0.005	-0.002	-0.105**	-0.013	-0.003	0.014	0.010
	(0.036)	(0.047)	(0.045)	(0.051)	(0.032)	(0.030)	(0.013)	(0.016)
Tenure (x 10 years)	-0.030	-0.088**	-0.048	0.002	-0.004	0.041*	0.005	-0.013
	(0.019)	(0.041)	(0.042)	(0.047)	(0.030)	(0.025)	(0.012)	(0.016)
Tenure ^{2}	0.007	0.015	0.017	-0.010	-0.006	-0.003	-0.004	-0.000
	(0.005)	(0.011)	(0.011)	(0.012)	(0.008)	(0.006)	(0.003)	(0.004)
Entry age (x 10 years)	-0.065*	0.005	0.089	-0.066	-0.038	-0.001	-0.048*	-0.005
	(0.038)	(0.066)	(0.072)	(0.077)	(0.049)	(0.029)	(0.025)	(0.023)
Entry age ^{2}	0.007*	0.000	-0.009	0.006	0.004	0.001	0.004*	0.000
	(0.004)	(0.006)	(0.007)	(0.007)	(0.005)	(0.003)	(0.002)	(0.002)
Observations	771	815	838	856	847	779	693	693

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table D17: Leaders' sub-categories and the probability of being a "good" and significant leader

Marginal effects on the probability of a leader having a positive and significant effect. Those are post-estimations of an ordered probit with three outcomes: having a negative and significant effect; having a non-significant effect and having a significant and positive one. I restrict the sample to leaders with tenure equal or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. The additive index is an unweighted sum of the standardized leaders' effects on all the outcomes. The PCA (Principal Component Analysis) index is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F).

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
ICRG Quality of governance		1.311***		1.909***		1.689**		1.624**
		(0.444)		(0.727)		(0.707)		(0.715)
Government effectiveness	0.469***		0.870***		0.766***		0.710***	
Decade FE	Yes	Yes	No	No	Yes	Yes	Yes	Yes
Region FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Region*Decade FE	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Observations	218	338	218	338	218	338	218	338
Adjusted R-squared	0.127	0.074	0.220	0.065	0.232	0.087	0.310	0.140
Robust standard errors in parentheses								
*** p<0.01, ** p<0.05, * p<0.1								

Table D18: Correlation between alternative performance indicators and the PCA index

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WLS estimators. The dependent variable is the PCA (Principal Component Analysis) index which is a linear combination of the six outcomes in such a way that we retain most of the information (see Appendix F). Weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. I restrict the sample to leaders with tenure equal to or longer than three years. The criteria used to build the background's categories is detailed in Appendix A. Standard errors are clustered at the country level.

E Additional Figures

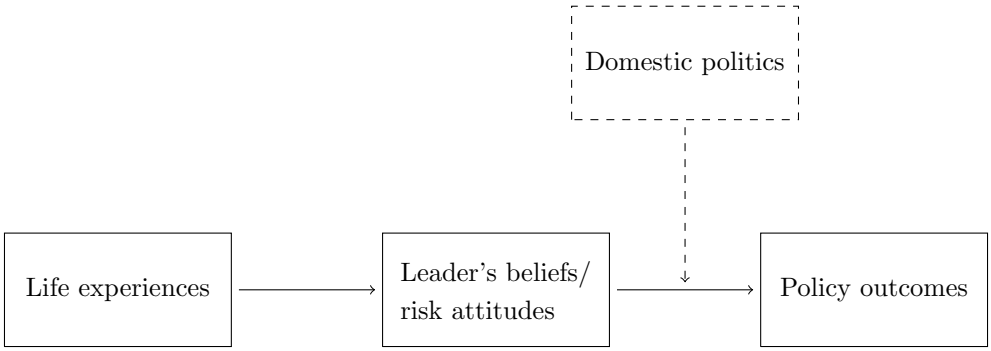
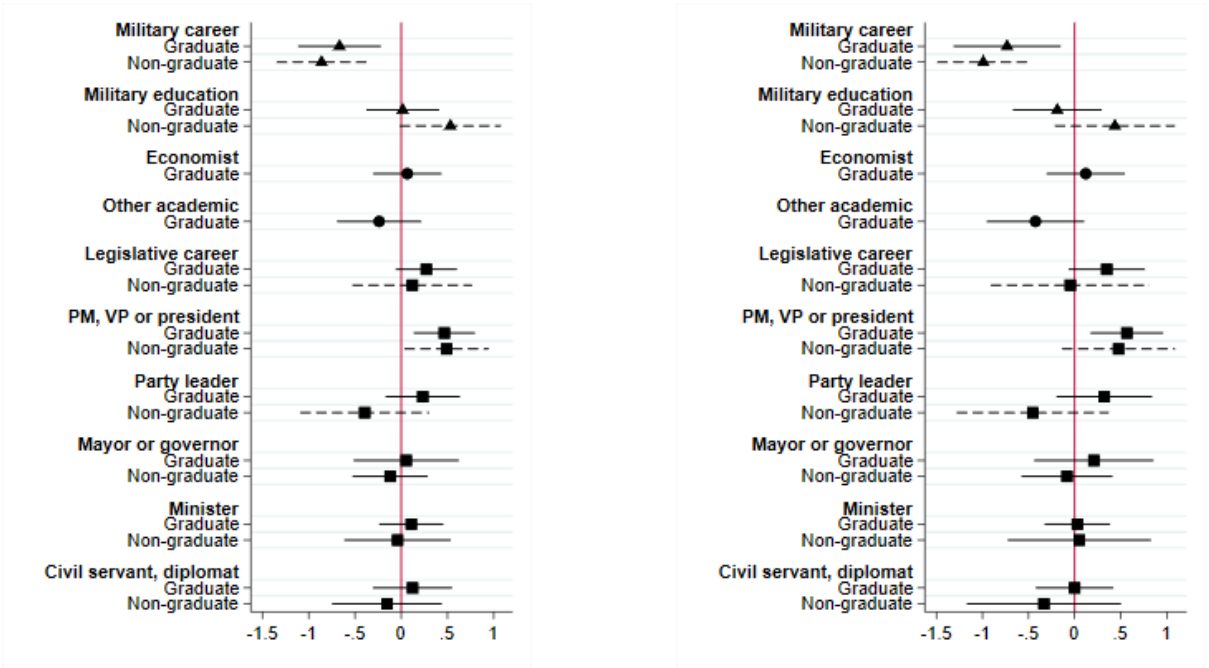


Figure E1: Theoretical relationship between leader's experiences and policy outcomes
Source: Horowitz and Stam (2014)

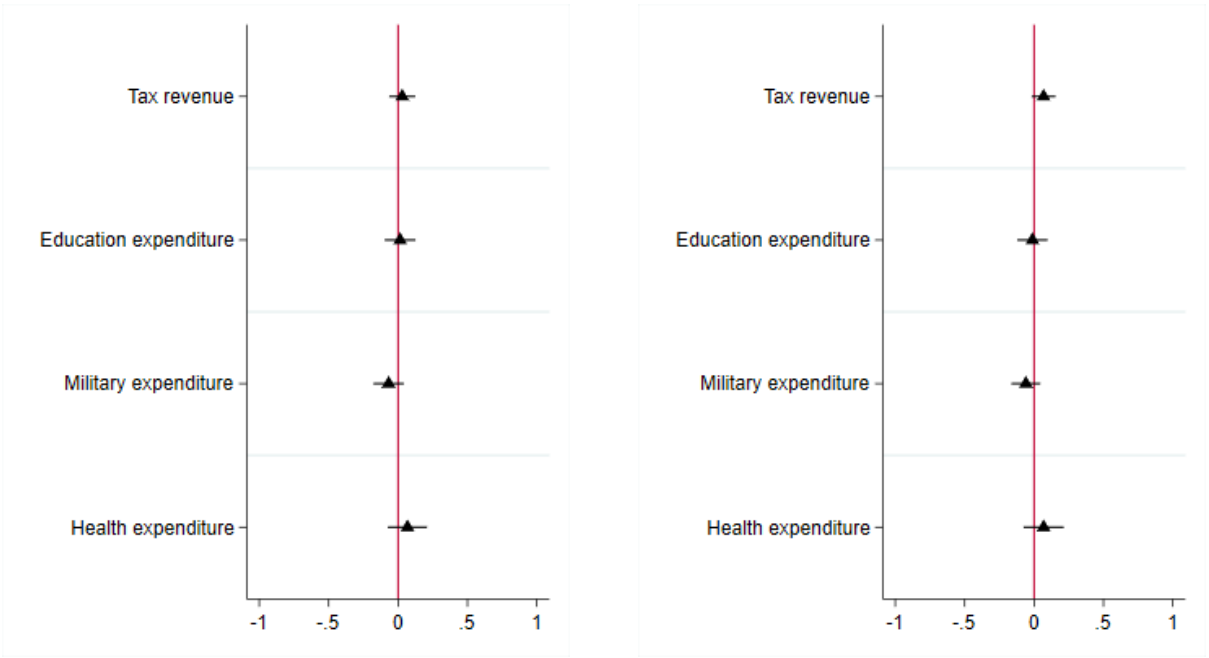


(a) Additive index

(b) PCA index

Figure E2: Leaders' effects by background and graduate level.

The graphs plot the coefficient for each leaders' category interacted with the constraint dummy on the aggregated leaders' effects obtained in Section 4. Those are post-estimations of weighted least-squares estimations where the weights are the ratio between the absolute value of the leader's effect and the posterior standard deviation. The criteria used to build the background categories and the definition of constraints is detailed in Appendix A. I restrict the sample to leaders with tenure equal to or longer than three years. The number of leaders included in each regression is 693. I also control for tenure, entry age, the square of these variables, and their interactions with constraints.



(a) Additive index (b) PCA index

Figure E3: Leaders' performance and initial policy levels.

The graphs plot the coefficient for the inital value of the labeled outcome during a leader's term on the two aggregated indexes of leaders' effects when controllinf for decade fixed-effects. Each coefficient is obtained in a different OLS regression. Standard errors are clustered at the country level. The regression for tax revenue includes 237 observations, for education expenditure includes 224 observations, for military expenditure 412 observations, for health expenditure 121 observations. The criteria used to build the background's categories and the source and definition of each dependent variable are detailed in Appendix A.

F Dimensionality-reduction

The PCA index used in this paper is obtained through a principal component analysis detailed in this section. I first restricted the sample to those leaders for whom I have data for all outcomes.As before, I multiply leaders' effects on corruption and conflict by -1 so a higher value is associated to a better performance.

Each dimension of the principal component analysis is a linear combination of variables in such a way that we retain most of the information. Figure E4 shows how much of the variance is explained by each principal component. Thus, with the two first dimensions we account for more than half of leaders' performance in all the considered outcomes. Table F1 shows the contributions for each variable in the three first dimensions. Dimension one mainly summarizes the effects of rule of law, democracy, and corruption, which are indeed the outcomes for which there are more significant leaders. Besides, a positive value in this dimension summarizes an overall positive performance, as it is positively associated with all economic and social outcomes and with lower corruption. More precisely, the first dimension is obtained as follows:

$$Dim_1 = 0.08\ LS_{\text{Growth}} + 23.64\ LS_{\text{Democracy}} + 25.04\ LS_{\text{Corruption}} + 38.25\ LS_{\text{Rule of law}} + 11.76\ LS_{\text{Property rights}} + 1.21\ LS_{\text{Conflict}}$$

A positive value in the second dimension can be interpreted as the leader having an overall positive effect on growth and peace, which, as said before are the two outcomes mote uncorrelated with the other variables. In part (a) of Figure E5 it is possible to visualize the contribution of each variable for each of the two first dimensions.

The next step consists in clustering leaders' according to their coordinates in the axis using a k-means clustering approach with k=2. It is possible to see in part (b) of Figure E5 that clusters are mainly constructed based on the first dimension, which is the one that best summarizes the general performance. Thus, it is the value of this first dimension that I use in previous tables as the synthetic outcome.

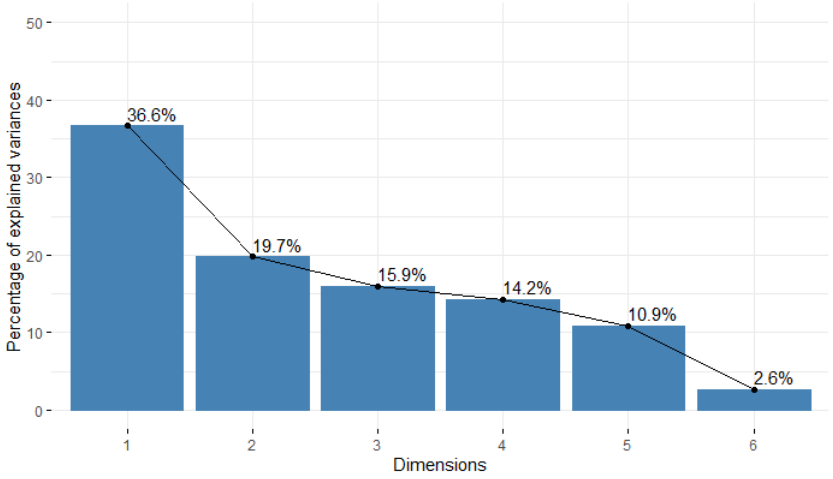


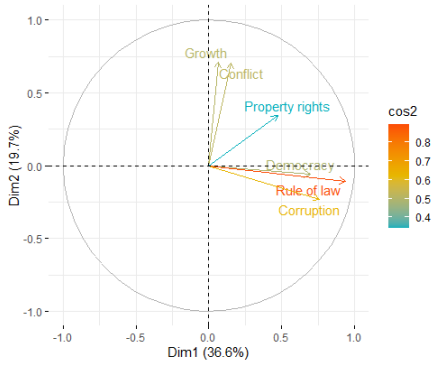
Figure E4: Variance explained by dimension

The figure shows the variance explained by each one of the dimensions of the principal component analysis using the leaders' effects for growth, democracy, corruption, rule of law, property rights and conflict obtained in Section 4.

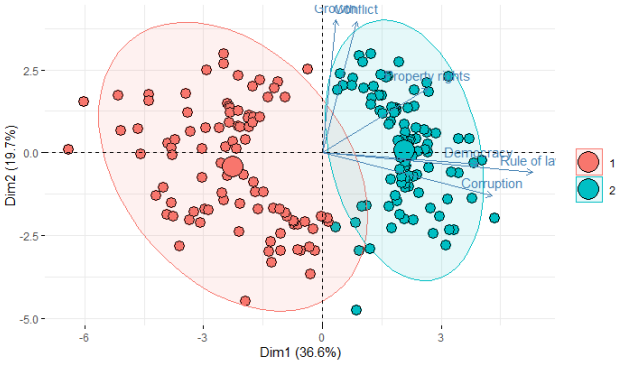
	Dimension 1	Dimension 2	Dimension 3
LE_{Growth}	0.085	38.601	39.054
$LE_{Corruption}$	25.048	4.741	17.726
$LE_{Democracy}$	23.641	0.726	1.574
$LE_{Property\ rights}$	11.760	9.816	38.207
$LE_{Rule\ of\ law}$	38.251	0.640	0.983
$LE_{Conflict}$	1.215	45.476	2.456

Table F1: Dimensions' contributions and leaders' effects

The table shows the contribution of the leaders' effects of each variable in the linear combination of each dimension. Leaders' effects are the ones obtained in Section 4.



(a) Variables' contributions



(b) Clustering of leaders' effects

Figure E5: PCA Biplots

Figure (a) reports the cos2 of each variable for the two first dimensions. Cos2 measures the quality of representation, meaning how much of a variable is represented in a given component. Figure (b) plots the leaders' effects, clustered through a k-means approach with a selected k=2.

G Leaders of selected transitions

Country	Transition year	Entering leader	Exiting leader	Type of exit
Afghanistan	1946	Mahmud Khan Ghazi	Hashim Khan	Resign for health
Albania	1986	Alia	Hoxha	Died in office
Algeria	1979	Benjedid	Boumedienne	Died in office
Angola	1980	Dos Santos	Neto	Died in office
Argentina	1943	Castillo	Ortiz	Died in office
Argentina	1975	Peron, Isabel	Peron	Died in office
Australia	1940	Menzies	Lyons	Died in office
Australia	1946	Chifley	Curtin	Died in office
Australia	1968	Gorton	Holt	Died in office
Azerbaijan	2004	Ilhma Aliyev	H. Aliyev	Died in office
Bahrain	2000	Hamad Isa Ibn Al-Khalifah	Isa Ibn Al-Khalifah	Died in office
Bangladesh	1978	Ziaur Rahman	Sayem	Died in office
Barbados	1986	Barrow	Adams	Died in office
Barbados	1988	Sandiford	Barrow	Died in office
Bhutan	1952	Wangchuk, Jigme Dorji	Wangchuk, Jigme	Died in office
Bhutan	1973	Wangchuck, Jigme Singye	Wangchuk, Jigme Dorji	Died in office
Bolivia	1949	Urriolagoitia	Herzog	Resign for health
Bolivia	1970	Ovando Candia	Barrientos Ortuna	Died in office
Bolivia	2002	Jorge Quiroga Ramirez	Banzer Suarez	Resign for health
Bosnia and Herzegovina	1999	Radisic	Izetbegovic	Resign for health
Bosnia and Herzegovina	2001	Radisic	Izetbegovic	Resign for health
Botswana	1981	Masire	Khama	Died in office
Brazil	1956	Kubitschek	Cafe Filho	Resign for health
Brazil	1970	Medici	Costa de Silva	Died in office
Bulgaria	1944	Cyril	Boris III	Died in office
Bulgaria	1950	Kolarov	Dimitrov	Died in office
Bulgaria	1951	Chervenkov	Kolarov	Died in office
Cameroon	1983	Biya	Ahidjo	Resign for health
Canada	1949	St. Laurent	King	Resign for health
Chile	1942	Rios Morales	Aguirre Cerda	Died in office
Chile	1947	Gonzalez Videla	Rios Morales	Died in office
China	1945	Chen Gongbo	Wang Jingwei	Died in office
China	1977	Hua Guofeng	Mao Tse-Tung	Died in office
China	1998	Jiang Zemin	Deng Xiaoping	Died in office
Comoros	1999	Azali Assoumani	Abdoulkarim	Died in office
Cote d'Ivoire	1994	Konan Bedie	Houphouet-Boigny	Died in office
Croatia	2000	Mesic	Tudjman	Died in office
Cyprus	1978	Kyprianou	Makarios	Died in office
Czechoslovakia	1936	Benes	Masaryk	Resign for health
Czechoslovakia	1953	Zapotocky	Gottwald	Died in office
Czechoslovakia	1958	Novotny	Zapotocky	Died in office
Denmark	1943	Scavenius	Stauning	Died in office
Denmark	1955	Hansen	Hedtoft	Died in office
Denmark	1961	Kampmann	Hansen	Died in office
Denmark	1963	Krag	Kampmann	Resign for health
Dominican Republic	1983	Blanco	Guzman Fernandez	Died in office
Ecuador	1940	Cordova Nieto	Mosquera Narvaez	Died in office
Ecuador	1982	Hurtado Larrea	Roldos Aquilers	Died in office
Egypt	1937	Farouk	Fuad I	Died in office
Egypt	1971	Sadat	Nasser	Died in office
Ethiopia	1931	Selassie	Judith (Zanditu)	Died in office
Finland	1941	Ryti	Kallio	Died in office
Finland	1946	Paasikivi	Mannerheim	Resign for health
Finland	1982	Koivisto	Kekkonen	Resign for health
France	1975	Giscard D'Estaing	Pompidou	Died in office
Gabon	1968	Bongo	Mba	Died in office
Gabon	2010	Bongo Ondimba	Bongo	Died in office
Greece	1936	Metaxas	Demertzis	Died in office
Greece	1950	Plastiras	Sophoulis	Died in office
Greece	1956	Karamanlis	Papagos	Died in office
Greece	1997	Simitis	A. Papandreou	Died in office
Guatemala	1931	Ubico Castaneda	Chacon	Resign for health
Guinea	1984	Conte	Toure	Died in office
Guinea	2009	Moise Dadis Camara	Conte	Died in office
Guyana	1986	Hoyte	Burnham	Died in office
Guyana	1998	Janet Jagan	Jagan Cheddi	Died in office
Guyana	2000	Bharrat Jagdeo	Janet Jagan	Resign for health

Haiti	1972	Duvalier, Jean-	Duvalier, Francois	Died in office
Honduras	1954	Lozano Diaz	Galvez	Resign for health
Hungary	1994	Boross	Antall	Died in office
Iceland	1964	Benediktsson	Thors	Died in office
Iceland	1971	Hafstein	Benediktsson	Died in office
India	1964	Shastri	Nehru	Died in office
India	1967	Gandhi, I.	Shastri	Died in office
Iran	1990	Khamenei	Ayatollah Khomeini	Died in office
Iraq	1934	Ghazi	Faisal I	Died in office
Iraq	1940	Abdul-Ilah	Ghazi	Died in office
Iraq	1967	Rahmen Aref	Salem Aref	Died in office
Israel	1970	Meir	Eshkol	Died in office
Israel	2007	Ehud Olmert	Ariel Sharon	Died in office
Jamaica	1968	Shearer	Sangster	Died in office
Jamaica	1992	Patterson	Manley	Resign for health
Japan	1965	Sato	Ikeda	Died in office
Japan	1981	Suzuki	Ohira	Died in office
Japan	2001	Junichiro Koizumi	Obuchi	Died in office
Jordan	2000	Abdullah Ibn Hussein El-Hashimi	Hussein Ibn Talal El-Hashim	Died in office
Kenya	1979	Moi	Kenyatta	Died in office
Kuwait	1966	Sabah As-Sabah	Abdullah As-Sabah	Died in office
Kuwait	1978	Jabir As-Sabah	Sabah As-Sabah	Died in office
Kuwait	2007	Sabah IV	Jabir As-Sabah	Died in office
Laos	1993	Phounsavanh	Phomivan	Died in office
Liberia	1972	Tolbert	Tubman	Died in office
Luxembourg	1954	Bech	Dupong	Died in office
Luxembourg	1960	Werner	Frieden	Died in office
Malaysia	1977	Hussein Bin Onn	Razak	Died in office
Malaysia	1982	Mahatir Bin Mohammad	Hussein Bin Onn	Died in office
Maldives	1979	Gayoom	Nasir	Died in office
Mauritania	1980	Ould Haidalla	Ould Bouceif	Died in office
Mongolia	1953	Tsedenbal	Choibalsan	Died in office
Morocco	1961	Hassan II	Mohammed V	Died in office
Morocco	2000	Muhammad VI	Hassan II	Died in office
Mozambique	1987	Chissano	Machel	Died in office
Nepal	1930	Bhim Rana	Chandra Rana	Died in office
Nepal	1933	Juddha Rana	Bhim Rana	Died in office
Nepal	1949	Mohan Rana	Padma Rana	Died in office
Nepal	1955	Mahendra	Tribhuvan	Died in office
Nepal	1973	Birendra	Mahendra	Died in office
New Zealand	1931	Forbes	Ward	Died in office
New Zealand	1941	Fraser, Peter	Savage	Died in office
New Zealand	1958	Nash	Holland	Resign for health
New Zealand	1975	Rowling	Kirk	Died in office
Nicaragua	1967	Anastasio Somoza Debayle	Shick Gutierrez	Died in office
Niger	1988	Seibou	Kountche	Died in office
Nigeria	1999	Obasanjo	Abacha	Died in office
North Korea	1995	Kim Jong-Il	Kim Il-Sung	Died in office
Norway	1933	Mowinckel	Kolstad	Died in office
Norway	1981	Brundtland	Nordli	Resign for health
Pakistan	1949	L. Khan	Jinnah	Died in office
Panama	1940	Boyd	Arosomena, Juan	Died in office
Panama	1950	Arias, A.	Diaz Arosomena	Died in office
Panama	1982	Dario Paredes	Torrijos Herrera	Died in office
Paraguay	1941	Morinigo	Estigarribia	Died in office
Philippines	1949	Quirrino	Roxas	Died in office
Philippines	1958	Garcia	Magsaysay	Died in office
Poland	1936	Smigly-Rydz	Pildsudski	Died in office
Poland	1957	Gomulka	Bierut	Died in office
Portugal	1969	Caetano	Salazar	Died in office
Romania	1966	Ceausescu	Georghiu-Dej	Died in office
Russia	1923	Stalin	Lenin	Died in office
Russia	1954	Khrushchev	Stalin	Died in office
Russia	1983	Andropov	Brezhnev	Died in office
Russia	1984	Chernenko	Andropov	Died in office
Russia	1986	Gorbachev	Chernenko	Died in office
Saudi Arabia	1954	Saud	Aziz	Died in office
Saudi Arabia	1983	Fahd	Khalid	Died in office
Saudi Arabia	1996	Abdullah	Fahd	Died in office
Sierra Leone	1965	Margai, A	Margai,M	Died in office
Singapore	1991	Goh Chok Tong	Lee Kuan Yew	Died in office
South Africa	1959	Verwoerd	Strijdom	Died in office
South Africa	1989	Botha	Botha	Died in office

Spain	1976	Arias Navarro	Franco	Died in office
Sri Lanka	1953	Senanayake, Dudley	Senanayake, Don	Died in office
Sri Lanka	1954	Kotelawala	Senanayake, Dudley	Resign for health
Swaziland	1983	Dzeliwe Shongwe	Subhuza II	Died in office
Sweden	1947	Erlander	Hansson	Died in office
Syria	2001	Bashar al-Assad	Al-Assad H.	Died in office
Taiwan	1975	Yen Chia-Kan	Chiang Kai-shek	Died in office
Taiwan	1978	Chiang Ching-Kuo	Yen Chia-Kan	Died in office
Taiwan	1989	Lee Teng-Hui	Chiang Ching-Kuo	Died in office
Thailand	1926	Rama VII	Rama VI	Died in office
Thailand	1964	Thanon Kittakachorn	Sarit	Died in office
Togo	2006	Gnassingbe	Eyadema	Died in office
Trinidad and Tobago	1982	Chambers	Williams	Died in office
Turkey	1939	Inonu	Ataturk	Died in office
Turkey	1972	Melen	Erim	Died in office
Turkmenistan	2007	Berdymuhamedov	Niyazov	Died in office
United Arab Emirates	2005	Khalifa bin Zayed	An-Nahayan	Died in office
United Kingdom	1957	MacMillan	Eden, Anthony	Resign for health
United States	1946	Truman	Roosevelt, F.	Died in office
Uruguay	1948	Batlle Berres	Berreta	Died in office
Uruguay	1966	Heber Usher	Giannattasio	Died in office
Uruguay	1968	Pacheco Areco	Gestido	Died in office
Venezuela	1936	Lopez Contreras	Gomez	Died in office
Vietnam	1970	Le Duan	Ho Chi Minh	Died in office
Vietnam	1987	Nguyen Van Linh	Le Duan	Died in office
Yemen Arab Republic	1963	AL-Sallal	Ibn Yahya Hamid	Died in office
Yugoslavia	1981	Kraigher	Tito	Died in office
Zambia	2009	Rupiah Banda	Levy Mwanawasa	Died in office