

# Better Than On-the-job Training: Political Leaders' Work Experience and Economic Performance\*

Xiangyu Shi<sup>†</sup> Tianyang Xi<sup>‡</sup> Yang Yao<sup>§</sup>

This version: November 2018

## Abstract

This paper studies how the work experiences of national leaders shape economic performance. We propose that the variety of experience in the public sector is an essential indicator of the leader's competence in managing economic affairs. Using a newly collected data set on national leaders' career backgrounds, the analysis finds that the index of variety of experience has a positive effect on growth. That effect is more pronounced in helping the economy recover from negative growth shocks. More experienced leaders manage the economy more efficiently, and they have a better record of maintaining political stability. By contrast, there is no evidence that experience in the private sector particularly matters for growth.

**Keywords:** Political Leaders, Variety of Experience (VOE), Economic Performance

**JEL:** E61, H11, M12, O20

---

\*We are thankful to the comments by Martin Feldstein, James Hollyer, Nina Pavcnik, James Poterba, Adam Przeworski, Austin Strange, and the participants at the 2017 NBER-CCER joint workshop, the 2017 AEI-Five joint conference at the Seoul National University, the Mortara International Development seminar at Georgetown University, and the 2018 China Meeting of the Econometric Society.

<sup>†</sup>PhD student, Department of Economics, Yale University. Email: xiangyu.shi@yale.edu

<sup>‡</sup>Assistant professor, National School of Development, Peking University. Email: tyxi@nsd.pku.edu.cn

<sup>§</sup>Professor, National School of Development, Peking University. Email: yyao@nsd.pku.edu.cn

# 1 Introduction

The political selection of national leaders lies at the heart of constitutional design. The literature converges on the finding that national leaders matter for economic growth (Besley et al., 2011; Glaeser et al., 2004; Jones and Olken, 2005). A strand of research establishes empirical links between leaders' specific career experiences and their policy preferences (Barro and Lee, 2005; Dreher et al., 2009; Göhlmann and Vaubel, 2007). However, there have been rare systemic accounts of what aspects of career experience are most relevant for economic performance. Our paper investigates this question through a newly collected data set on the career backgrounds of national leaders.

We find that pre-tenure work experience in the public sector matters, but that from the private sector does not. Specifically, the variety of work experiences of leaders in different positions stands out as a robust determinant of strong economic performance. To that end, we construct a simple measure of leaders' work experience by counting the kinds of varied pre-tenure work experiences in the public and private sectors. We define this measure as the variety-of-experience (VOE) index of leaders, and empirically examine its effects on growth.

Growth regressions based on a sample of 135 countries for 1950-2010 obtain a strong positive effect of VOE in the public sector on growth. In the baseline model, a unit rise in the VOE index is associated with an increase in gross domestic product (GDP) growth by at least 0.35 percentage point. By contrast, national leaders' experiences in the private sector do not make the economy grow faster. Leaders' age and seniority, as measured by pre-tenure years spent in the public sector, also do not promote economic performance. An examination of the dynamic patterns identifies persistent effects of leaders' VOE on long term growth, but not on the preexisting trajectory of growth.

We deal with the potential endogeneity problem through a set of empirical strategies. First, it is possible that voters favor more established politicians during an economic upswing. To examine whether this channel may lead to reverse causality, we collect the biographic information of the major rival candidates in democratic countries for the post-1990 years. Using similar measures for the experiences of rivals, we test whether the propensity to elect a higher-VOE candidate is affected by the preexisting

trends of economic growth or crisis. The empirical results show that this is not the case.

Second, we follow the identification strategy of Besley et al. (2011) and Jones and Olken (2005) to validate causality from VOE to economic growth through using a quasi-random leadership transition sample. This approach allows us to identify 47 episodes of transition in which preceding leaders died in office due to accidents or natural causes. Regression analyses based on the 10-year window around the transition episodes report a significant and stronger growth effect of VOE from the public sector, but not from the private sector.

The theoretical literatures on managerial economics and political science provide insights for explaining the growth effects of leaders' public sector experience. Exposure to policy-making in different positions before assuming the highest office may provide leaders "general human capital" for political leadership. Lazear (2009) proposes a model on corporate leadership, which is construed as a weighted sum of diversified skills. This interpretation is consistent with Besley (2005)'s argument that "political competence is probably a complex mix of skills."

Meanwhile, national leaders with richer pre-tenure experience in the public sector tend to be "insiders" of the political system. They have an advantage from acquiring tacit knowledge within political networks, and they may be more capable of working across partisan lines to solve problems. As a result, more experienced leaders should be politically more resilient, and they do a better job at smoothing economic fluctuations.

We present a set of tests to bolster the interpretation of VOE as an indicator of leaders' competence. First, we test the growth effect of VOE with the presence of an economic or political crisis. We find that leaders with higher VOE from the public sector help the country recover sooner from economic downturns due to crises. Second, we show that the VOE in the public sector enhances the quality of economic growth and social cohesion. Specifically, the VOE is positively associated with country-level growth in total factor productivity (TFP) and negatively correlated to the share of government consumption. Countries led by higher-VOE leaders witness less social unrest and the regimes have longer duration. Altogether, the results suggest that the ability to maintain economic stability translates into high political resilience.

Studying the growth effects of leaders’ experience sheds lights on the importance of political selection in a time when democracies face challenges of economic and political uncertainty. Descending from classical political writings such as *The Federalist Papers*, it is recognized that the advantage of republics lies in their effectiveness in selecting good leaders (Besley, 2005). In turn, politicians’ records in the public sector provide an informative base for the electorate to evaluate their credential as good leaders. History provides abundant examples of national leaders with rich experiences in the public sector, such as Clement Attlee in the United Kingdom and Giscard d’Estaing in France.<sup>1</sup> They had successful records of economic performance and were able to leave important political legacies. With the rise of anti-establishment sentiments and right wing populist leaders on the Western political stage, however, the conventional model of political selection is facing a challenge. During economic downturns, the media often popularizes arguments that business tycoons may become good leaders for running economy. In contrast, veteran politicians with rich experience in the public sector tend to be accused of causing economic recessions. This paper provides a rebuttal to the claim that public sector experience does not matter. Experience leads to competence. This line echoes Joe Biden’s comment that “the presidency is not something that lends itself to on-the-job training.”

## 2 Experience and Competence

Our study on leaders’ work experiences parallels an array of literature on corporate chief executive officers (CEO). Political leaders, like CEOs, rely on authority, rather than decentralized mechanisms, to command subordinates (Coase, 1937). CEOs’ decisions have far-reaching impacts on the performance of firms (Bertrand and Schoar, 2003; Chang et al., 2010). A contestable labor market provides a mechanism for pricing competence, which can be inferred through CEOs’ past performance (Fama, 1980; Holmström, 1999). For national leaders, competence is not readily observable because leaders have no opportunity to serve as national leaders in other countries before assuming the current office. As a result, the electorate (selectorate) lacks job records

---

<sup>1</sup>According to our definition, Attlee has a score of 7 and d’Estaing has a score of 6 on VOE[public], the top quantile in the distribution of VOE[public] scores.

to infer leaders' competence in political selection, and pre-tenure work experiences become meaningful signals of political competence.

The literature lends support to the theoretical insight that more experienced leaders are more capable of promoting growth. The first mechanism is that relevant experiences enhance competence in strategic policy-making. Becker (1962) considers work experience to be an important source of human capital in addition to education, holding that "on-the-job training is a process that raises future productivity and differs from school training in that an investment is made on the job rather than in an institution that specializes in teaching." In particular, work experiences in diverse capacities and areas help business leaders acquire multifaceted knowledge and contribute to their generalist human capital.

Recent works on corporate governance attest to an empirical link between the variety of work experience and the competence of CEOs. Murphy and Zabojnik (2004) find a significant increase in CEO pay and outside hiring among large companies in recent decades. They attribute this pattern to the rising importance of general management skill, which involves knowledge from diverse backgrounds, in shaping firms' values. Echoing this argument, Custódio et al. (2013) find a 19% relative pay premium for generalist CEOs among Standard and Poor's 1,500 firms. They measure generalist skill through the use of variety of work experiences, including the number of positions, firms, industries, and previous experience of CEOs. Brockman et al. (2016) report a similar pay premium of generalist CEOs and argue that the demand for generalists stems from complex strategic situations of large corporations.

Another mechanism underlying the growth effect of work experiences is that leaders may establish connections with different government branches through work experiences. Veteran politicians have stronger political network, so they may be more effective agenda setting, consensus building, and deal making (Cox and McCubbins, 2005; Neustadt, 1991; Shugart and Carey, 1992). Hermalin (1998) provides a formal framework of leadership, which is defined as the principal's efficacy in inducing the self-enforcing compliance of followers. Leaders' authority stems from their information advantage over the fundamental returns to effort, which becomes credible when they personally engage in costly effort (leading by example). Dewan and Myatt (2008)

model leadership as a focal point in policy making. The ability to induce an agreement lies in leaders' personal network among political parties. In either scenario, previous work experience as an "insider" may reduce the cost of negotiation among government branches. This translates into an institutional advantage in dealing with economic shocks.

The political science and political economy literatures report ample evidence that the work experiences of national leaders matter for policies. Career backgrounds in the business and finance sectors are found to make leaders more likely to embrace economic liberalization (Göhlmann and Vaubel, 2007; Hayo and Neumeier, 2014; Jochimsen and Thomasius, 2014). There has been rare empirical research, however, on how multifaceted work experiences affect economic performance. By investigating on leaders' work experience as a kind of "political human capital," this paper makes a tangible contribution to the literature emphasizing the role of human capital in economic growth (Barro, 2001; Becker et al., 1990; Glaeser et al., 2004).

## 3 Data and Specification

### 3.1 Leaders' Experiences

Information on leaders' work experiences was manually collected from 135 countries for the period between 1950 and 2010. For the national leaders, we focus on the head of executive branch in the central government, that is, the president in presidential systems and the prime minister (premier) in parliamentary systems. For the leaders in semi-presidential systems, we follow the definition in Przeworski (2013) to identify the president as the head of government if the constitutional power to remove the prime minister resides in the president as opposed to the parliament, and identify the prime minister as the chief executive if otherwise. We also follow Goemans et al. (2009) to identify the general secretary of the Communist Party as an effective leader.

We code seven categories for leaders' work experiences in the public sectors prior to their current political term. *Vice president* is a dummy variable indicating whether the incumbent leader served as the vice president (or vice prime minister in parliamentary systems). *Minister* is a dummy variable indicating whether the incumbent leader

served as a minister or head of a bureaucratic agency. *Legislator* captures whether the leader served as a state legislator in the lower or upper chamber. *Local governor* specifies whether the leader has executive experience in a subnational government. *Party leader* measures whether the leader served as the general secretary or chairman of a political party. *Central government* indicates whether the leader worked as a technocrat in any bureaucratic office of the central government. *Military* captures whether the leader served in the military sector or intelligence agency<sup>2</sup>. Based on these measures, we construct an index for the variety of (work) experiences through a simple counting scheme.

$$\text{VOE}[\text{Public}] = \sum_{i=1}^7 \text{exp}_i$$

In the above expression,  $\text{exp}_i$  refers to the dummy variable for a specific experience category  $i$ . So  $\text{VOE}[\text{Public}]$  is a categorical variable with values in  $\{0, 1, \dots, 7\}$ .

We use a similar approach to construct an index for work experiences in the private sector. We code whether the leader had any pre-tenure work experience in each sector, separately: *Agriculture* indicates that the leader worked in the farming, forestry, fishery, or animal husbandry industry; *Manufacture* indicates whether the leader worked in the manufacturing sector; *Science* is a dummy variable on whether the leader worked in a lab or research institute; *Finance* indicates whether the leader worked in the financial sector; *Law* indicates whether the leader worked in a law firm or law-related industry; *Media* indicates whether the leader had any work experience in the media; *NGO* indicates whether the leader worked in in a nongovernmental organization (NGO); *Art-sport* indicates whether the leader had any previous careers related to arts or sports. The variety of experience in the private sector is obtained by summing all these dummy variables.

## 3.2 Economic and Political Variables

The dependent variable throughout this paper is economic growth, which is measured by the per capita GDP. The information on GDP and population were obtained

---

<sup>2</sup>A chief executive who is simultaneously commander-in-chief according to the constitution (such as the U.S. presidents) is not considered having experience in military service. For example, military experience is registered for Eisenhower and George Bush, but not for Obama and Trump.

from Penn World Table (PWT) 8. We include a set of control variables of leaders' personal characteristics and socioeconomic conditions. The specific definitions of these variables are as follows.

We include two variables of leaders' characteristics, *Age* and total *Years in the Public Sector*, which may be a confounding factor for the VOE. It is possible that competence in promoting growth is proportional to life experience and total length of work experience in the government rather than the kinds of different work experiences. Or, it may be the case that the electorate is more in favor of political insiders when economic performance is satisfactory. VOE may be an indicator of being a political insider, not competence. In comparison, a long career in the public sector with relatively "narrow" experiences in some particular positions is indicative of a high degree of political embedment of politicians. We additionally control for the gender ( $1[Male]$ ) and the level of education ( $1[College]$  and  $1[Graduate\ School]$ ) of national leaders. In the appendix, we provide the results of tests over specific channels driving the main effect of VOE. For this purpose, we employ the dummy variables on work experience in each category separately to study their impact on growth.

For socioeconomic conditions, we are interested in whether the effects of experience are different during normal times and during crises. We adopt two measures of crisis.  $1(Economic\ Crises)$  is a dummy variable that takes value one if the growth of per capita GDP in a year is negative, or if the inflation rate is higher than 10% based on the PWT 8.0 data. The dummy variable  $1(Political\ Crises)$  indicates whether a political regime is under the threat of being overthrown. It is coded in accordance with "domestic4," indicating "any rapidly developing situation that threatens to bring the downfall of the present regime," which was obtained from the Cross-National Time-Series Data Archive (Banks and Wilson, 2017).

In addition to the indicator of crisis, we employ several variables reflecting the channels of economic growth and political stability.  $\log(K\ per\ Capita)$  is computed according to information on capital stock from PWT 8.  $\log(TFP)$  measures the logarithm of real TFP from the national accounts.  $\frac{G}{GDP}$  measures the share of government consumption over total GDP. *Regime Durability* is computed as the number of years since the most recent regime change, defined by a three-point change in the Polity

Score within the window of three years or less, or the length of time since the last regime transition, as defined by the the Quality of Government database (Teorell et al., 2016).  $1(Unrest)$  is a dummy variable indicating whether there were any social riots, registered by *domestic6* and *domestic7* in Banks and Wilson (2017). Finally, economic growth and political selection may be correlated with the quality of democratic institutions. To deal with the omitted variable bias, we control for *Polity2*, an indicator of political democracy obtained from the Polity IV database (Marshall et al., 2017).

### 3.3 Model Specification

The baseline model for estimation concerns the effects of VOE on economic growth in the full 1950-2010 sample. Let  $y$  be the main dependent variable, the logarithm of per capita GDP. The growth effect of VOE is estimated by the following equation.

$$y_{ij,t} = \alpha \cdot y_{ij',t-1} + \theta \cdot \text{VOE}[\text{public}]_{jt} + X_{ij,t} \cdot \beta + u_i + v_t + \epsilon_{ijt} \quad (1)$$

In equation (1),  $y_{ij,t}$  is the logarithm of per capita GDP in country  $i$  with leader  $j$  during year  $t$ , and  $y_{ij',t-1}$  is the GDP per capita of country  $i$  in year  $t - 1$  under the leadership  $j'$ , where  $j'$  and  $j$  need not be the same person.  $\text{VOE}[\text{public}]_{jt}$  is the index of experience as defined in section 3.1.  $X_{ij,t}$  includes a set of control variables, including leaders' personal characteristics and the Polity Score.  $u_i$  and  $v_t$ , respectively, represents the country and year fixed effects. Inclusion of the country and year fixed effects helps eliminate the omitted variable bias that is specific to a country or time period. The standard Nickell bias due to control of the lagged dependent variable is compressed in a long panel ( $T \geq 30$ ). As a robustness check, we explore alternative models, including one using the first-difference of logarithm of per capita GDP as the dependent variable and another estimation using the generalized method of moments (GMM). The results are the same as in the baseline model.

In section 4.4, we adopt the empirical strategy pioneered by Jones and Olken (2005) and Besley et al. (2011) to study the effect of VOE in a small sample of random leadership transition, in which the predecessor died in office due to an accident or

natural causes. Let  $q$  be the indicator of leadership transition and  $g_{iq,t}$  be the annual growth rate of per capita GDP during year  $t$  of the transition period  $q$ , the leader effect in transitions can be estimated as:

$$g_{iq,t} = \Psi_q^{\text{PRE}} \cdot 1[\text{PRE}]_{q,t} + \Psi_q^{\text{POST}} \cdot 1[\text{POST}]_{q,t} + u_i + v_t + \epsilon_{izt} \quad (2)$$

$1[\text{PRE}]_{q,t}$  and  $1[\text{POST}]_{q,t}$  are dummy variables indicating the pre-transition and post-transition periods, respectively, for each leadership transition. The estimated coefficients  $\Psi_q^{\text{PRE}}$  and  $\Psi_q^{\text{POST}}$  represent the average leader effect before and after the transition. The Wald-statistic corresponding to the chi-squared test is computed as follows.

$$W = \frac{1}{N_q} \sum_{q=1}^{N_q} \frac{(\overline{\text{POST}}_q - \overline{\text{PRE}}_q)^2}{2(\hat{\sigma}_{\epsilon_i}^2/T)} \quad (3)$$

$\hat{\sigma}_{\epsilon_i}^2$  is the estimate of the country-specific standard error. The null hypothesis is that there is no difference in growth before and after each random transition.  $W \times N_q$  follows a  $\chi_{N_2}^2$  distribution under the null hypothesis.

## 4 Empirical Results

### 4.1 Baseline Results

Table 1 presents the baseline results. In column (1), we use  $\text{VOE}[\text{public}]$  as the main explanatory variable, only controlling for the lagged dependent variable and the country and year fixed effects.  $\text{VOE}[\text{public}]$  is found to have a significantly positive estimated coefficient, with a one-category increase in  $\text{VOE}[\text{public}]$  leading to a 0.353 percentage point increase in the growth rate. This estimate implies that one standard deviation in leader's  $\text{VOE}[\text{public}]$  may translate into 6.7% of one standard deviation in the growth rate in the full sample.

In column (2), we additionally control for leaders' personal characteristics, includ-

ing age, gender, and level of education, as well as the Polity Score. The estimate for  $\text{VOE}[\text{public}]$  is qualitatively the same, and personal characteristics other than  $\text{VOE}[\text{public}]$  do not appear to enhance growth. The Polity Score also does not have a significant effect on growth. This finding sheds lights on a novel mechanism linking political democracy to economic growth in the recent literature (Acemoglu et al., 2018; Papaioannou and Siourounis, 2008). Because democracies tend to select leaders with a higher degree of  $\text{VOE}[\text{public}]$  than autocracies do, and leaders with higher  $\text{VOE}[\text{public}]$  help the economy grow faster, democracies may enhance growth by selecting more experienced leaders. Column (3) includes the previous term of a national leader as one type of public service experience in the  $\text{VOE}[\text{public}]$  index. The results are similar.

Column (4) provides a placebo test by using the length of career in the public sector, as opposed to  $\text{VOE}[\text{public}]$ , as the explanatory variable. It may be the case that the estimates are incidental. For example, the estimate may just capture the effect that voters are more willing to select political insiders when economic growth is satisfactory. A positive coefficient for  $\text{Public-years}$ , which is a proxy for political insiders, may suggest the existence of such an alternative mechanism. As column (4) reports, the coefficient for years in the public sector is small and insignificant. Hence, the hypothesis about rewarding political insiders is not favorably supported by the data. It is interesting to note that, in the real world, the variety of experience and the length of political career need not go hand in hand. Marine Le Pen has a lower score for  $\text{VOE}[\text{public}]$  than Emmanuel Macron does, despite that Le Pen is 10 years older than Macron, and had spent 13 years more in the public sector than Macron had as of 2017.<sup>3</sup>

In comparison, we do not find empirical support that leaders' work experience in the private sector helps the economy grow faster. The estimated coefficient for  $\text{VOE}[\text{private}]$  reported in column (5) is negative and insignificant. In column (6), we employ  $\text{VOE}[\text{public}]$  and  $\text{VOE}[\text{private}]$  as explanatory variables. The coefficient for  $\text{VOE}[\text{public}]$  remains positive and significant. The coefficient for  $\text{VOE}[\text{private}]$  becomes positive, but small, and statistically insignificant. This result suggests that

---

<sup>3</sup>Following our definition of  $\text{VOE}[\text{main}]$ , Macron had three different work experiences prior to his bid for the French presidency: he was the Minister of Economy and Finance, and the leader of a political party (En Marche!). His  $\text{VOE}[\text{public}]$  score is then 2. Le Pen had only one public sector career before: the president of the National Front. So her  $\text{VOE}$  score is 1.

Table 1: The Variety of Experience (VOE): Baseline Results

	Dependent variable: log[GDP per Capita]					
	(1)	(2)	(3)	(4)	(5)	(6)
VOE[public]	0.353*** (0.108)	0.359*** (0.107)				0.396*** (0.104)
VOE[public+presidency]			0.297*** (0.104)			
Public-years				0.001 (0.012)		
VOE[private]					-0.044 (0.146)	0.026 (0.149)
Age		0.009 (0.012)	0.013 (0.012)	0.014 (0.012)	0.008 (0.011)	0.003 (0.011)
1(Female)		0.222 (0.578)	0.223 (0.583)	0.270 (0.606)	0.164 (0.572)	0.205 (0.582)
1(College)		0.631 (0.661)	0.724 (0.643)	0.705 (0.677)	0.661 (0.694)	0.598 (0.711)
1(Grad School)		0.470 (0.642)	0.540 (0.628)	0.564 (0.648)	0.495 (0.673)	0.397 (0.689)
Lag Polity Score		-0.029 (0.026)	-0.028 (0.025)	-0.019 (0.027)	-0.010 (0.025)	-0.025 (0.026)
Lag log(GDP per Capita)	96.88*** (0.793)	96.92*** (0.787)	96.94*** (0.780)	97.04*** (0.740)	96.66*** (0.727)	96.53*** (0.777)
Fisher-type test (p-value)	0.000	0.000	0.000	0.000	0.000	0.000
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
R-squared	0.980	0.981	0.981	0.981	0.981	0.981
Number of countries	135	135	135	135	134	134
Observations	5,954	5,925	5,924	5,980	6,064	5,882

All results are based on within estimates. The sample covers 135 countries for 1950 to 2010. VOE[public] counts the sum of work experiences of leading a government sector (such as being a minister, legislator, governor). VOE[Private] registers only the variety of work experiences in the private sector. For each column, we report the p-value for the Fisher-type unit root test on the null hypothesis that all panels have a unit root. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

work experience in the public sector may be more decisive than the private sector experience for enhancing economic performance.

## 4.2 Dynamic Effects

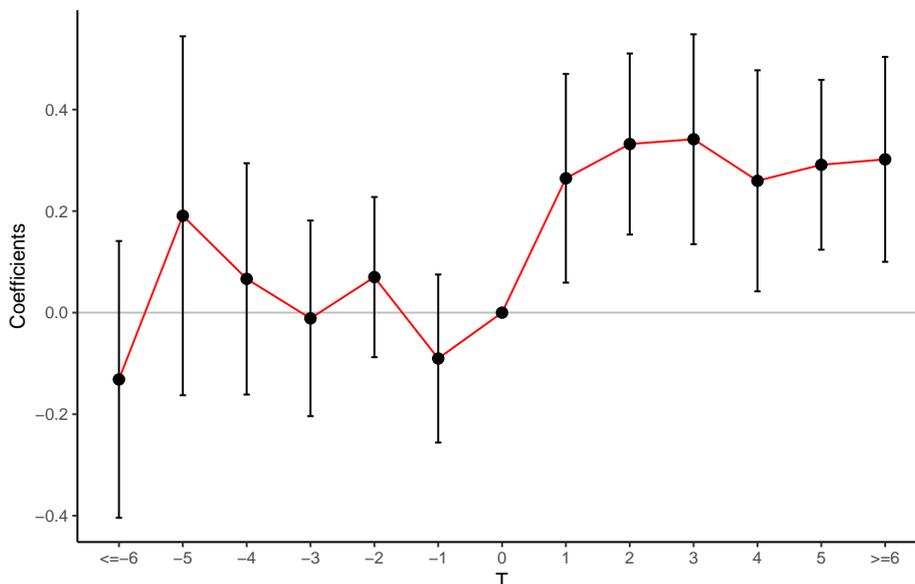
The main challenge to identification is that the national leaders were not randomly selected, and there may be time-varying omitted variables that correlate with both growth and the intention for political selection. In a dynamic setting, one rival explanation is that countries elect (select) more experienced leaders because of strong growth, or the intention to boost growth (Stokes, 2001). For example, one could argue that economic growth became a salient goal for the Communist Party of China in the 1980s following a decade of internal chaos due to the Cultural Revolution. The promotion of senior cadres and technocrats with richer experiences (as opposed to young revolutionaries) may simply reflect the changing direction of economic policies. To detect this mechanism, we investigate the dynamic impacts of leaders' VOE[public] on growth in the years before and after the leader's term.

$$\begin{aligned}
y_{ij,t} = & \sum_{1 \leq \tau \leq 5} \theta_{\tau}^1 \cdot \text{VOE}_j \cdot \text{POST}_{ijt,t_1+\tau} + \theta_6^1 \cdot \text{VOE}_j \cdot \text{POST}_{ijt,t_1+6} \\
& + \sum_{1 \leq \pi \leq 5} \theta_{\pi}^2 \cdot \text{VOE}_{j+1} \cdot \text{PRE}_{i,j+1,t,t_2-\pi} + \theta_6^2 \cdot \text{VOE}_{j+1} \cdot \text{PRE}_{i,j+1,t,t_2-6} \\
& + \alpha \cdot y_{ij',t-1} + \mathbf{X}_{ij,t} \cdot \beta + u_i + v_t + \epsilon_{ijt}
\end{aligned} \tag{4}$$

In equation (4),  $y_{ij,t}$  is the logarithm of per capita GDP of country  $i$  under the leadership of  $j$  in year  $t$ .  $\sum_{1 \leq \tau \leq 5} \theta_{\tau}^1 \cdot \text{VOE}_j \cdot \text{POST}_{ijt,t_1+\tau}$  captures the dynamic long-term effect of leaders' VOE.  $\text{POST}_{ijt,t_1+\tau}$  is a dummy variable indicating whether year  $t$  was  $\tau$  years post year  $t_1$ , the starting year of leader  $j$ 's current term. We bundle the period after six years into one dummy variable. By a similar token,  $\text{VOE}_{j+1} \cdot \text{PRE}_{i,j+1,t,t_2-\pi}$  models the pre-trending effect that growth at time  $t$  may be "impacted" by the next leader  $j+1$ , who would come into office at a future time  $t_2$ . For simplicity we also bundle the period lagging six years or more into one dummy. If the selection of high-VOE[public] leaders is associated with forthcoming improvement of economic performance, we should expect a strong pre-trending effect of VOE[public]. Otherwise,

the estimated coefficients of  $\theta_{\pi}^2$  should not be significantly different from zero.

Figure 1: Dynamic Impacts of VOE[public] on Growth



The figure presents the impacts of pre-trends and post-trends of VOE[public] on growth. Time 0 is the year in which a political leader  $j$  starts his/her current term. The coefficients for  $t = 1, 2, \dots$  report the estimated effect of leader  $j$ 's VOE on the years following 0. The coefficients for  $t = -1, -2, \dots$  report the estimated effect of VOE[public] on growth in the preceding years.

Figure 1 presents the estimated results from equation (4). It is evident that VOE[public] does not have any significant growth effects in the years leading to the leaders' current term. By contrast, VOE[public] has strong and persistent effects of promoting growth provided that the same leader remained in office. The finding that the VOE[public] effect does not shrink over time reinforces the argument that more experienced leaders help enhance growth.

### 4.3 Political Selection

In addition to the pre-trend test, we deal with the concern about political selection through investigating whether the electorate's preference over VOE[public] is related to the trend of growth. For this purpose, we collect information of the major rival candidates in about 170 national elections of democratic countries during the 1990-2010 period. The major rival candidate is defined as the one with the largest vote share among all the losing candidates. With the information on the major rivals' work

experiences in the public sector, we are able to construct dummy variable **1(Higher-VOE[public] Candidate Wins)**. We then employ a linear probability model to study whether the probability of selecting a higher VOE[public] candidate was affected by the dynamics of economic growth and political stability.

We adopt three sets of measures of preexisting growth trajectories. In column (1), the main explanatory variables are the three time lags of economic growth. The explanatory variable used in column (2) is the average growth rate for the three preceding years. Neither the lagged growth or the three-year average affected the probability of electing a higher VOE[public] leader. In columns (3) and (4), we adopt a dummy for economic crisis, which is coded 1 if the annual growth is negative as reported by PWT 8. Columns (5) and (6) expand the definition for recession to a political crisis, which is defined by “domestic4” in (Banks and Wilson, 2017). As Table 2 shows, neither economic or political crisis appears to be significantly correlated with the outcome of election. It is unlikely that the aspiration for strong growth causes the selection of highly experienced leaders.

#### 4.4 Random Transitions

The third empirical strategy we adopt to deal with the identification problem follows Jones and Olken (2005) and Besley et al. (2011) to explore the cases in which leaders died in office by accident or natural causes. Because the exits of the leaders were not planned ahead, the transitions are quasi-random. This approach identifies 47 scenarios of quasi-random transitions during the 1950-2010 period. Among them, 19 cases feature a transition from leaders with lower to higher score on VOE[public]. High-profile cases of such transition include the transition from Gamal Nasser to Anwar Sadat in Egypt (1970), from Masayoshi Ohira to Zenko Suzuki in Japan (1980), and from Georges Pompidou to Giscard dEstaing in France (1974). We estimate the leader effects for the pre-transition and post-transition leaders using the model specified by Equation (2), and compute their difference,  $\widehat{\Psi}_q^{POST} - \widehat{\Psi}_q^{PRE}$ , for each different type of transition. As Table 3 reports, the economy grows nearly 2 percentage points faster after transition to a leader with higher VOE[public]. The Wald-test reports a Chi-squared statistic of 28.86 and a p-value of 0.069 for the growth difference be-

Table 2: Accounting for Political Selection

	1(Higher-VOE[public] Candidate Wins)					
	(1)	(2)	(3)	(4)	(5)	(6)
Lag1 growth	0.370 (0.928)					
Lag2 growth	-0.803 (1.583)					
Lag3 growth	0.468 (1.396)					
Avg. Lag1-3 growth		0.111 (1.338)				
Lag1 economic crisis			-0.052 (0.086)			
Lag2 economic crisis			0.096 (0.083)			
Lag3 economic crisis			0.000 (0.080)			
Avg. Lag1-3 economic crisis				0.0568 (0.099)		
Lag1 political crisis					-0.057 (0.096)	
Lag2 political crisis					0.188** (0.090)	
Lag3 political crisis					-0.067 (0.094)	
Avg. Lag1-3 political crisis						0.061 (0.165)
p-value for F-test	0.953		0.687		0.121	
Country FE	Y	Y	Y	Y	Y	Y
Election Year FE	Y	Y	Y	Y	Y	Y
R-squared	0.638	0.636	0.628	0.623	0.640	0.623
Observations	170	170	173	173	173	173

The estimates are based on national elections in democratic countries for the 1990-2010 period. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

tween the post- and pre-transition periods. In comparison, for transition to lower VOE[public] leaders and transitions with no change in the score of VOE[public], the growth difference is slightly negative and insignificant. We also differentiate the transitions into three groups according to the changes in VOE[private]. As the bottom panel of Table 3 shows, changes in experiences in the private sector are not associated with any significant difference in growth rate.

Table 3: Random Leadership Transitions

	(1)	(2)	(3)
VOE[public]	Increased	Decreased	Unchanged
Post - Pre	0.0197	-0.0049	-0.0025
P-Value of Wald Statistic	0.069	0.148	0.975
Number of Transitions	19	12	16
VOE[private]	Increased	Decreased	Unchanged
Post - Pre	0.003	0.008	-0.001
P-Value of Wald Statistic	0.253	0.892	0.126
Number of Transitions	7	12	28

The sample covers 135 countries between 1950 and 2010. Random leadership transitions consist of three types with regard to changes in experience: (1) transition from a leader with higher VOE to one with lower VOE; (2) transition from a leader with lower VOE to one with higher VOE; and (3) transition between two leaders with the same VOE score.

## 4.5 Times of Crisis

Economic growth follows different dynamic patterns in different countries. Cross-country research has shown that economic fluctuations are higher in developing countries than in developed countries (Cerra and Saxena, 2008; Pritchett, 2000). In turn, political leaders may exert personal influence on growth differently during normal times and in crises. The positive correlation between VOE[public] and growth may be driven by two underlying mechanisms. First, higher VOE[public] leaders may do a genuinely better job at stimulating the economy: they may make economy grow faster

Table 4: VOE and Crises

	Dependent Variable: log(GDP Per Capita)					
	Full Sample		Pre-elected Leaders		Newly-elected Leaders	
	(1)	(2)	(3)	(4)	(5)	(6)
VOE[public]	0.028 (0.106)	0.299*** (0.108)	0.054 (0.120)	0.256** (0.126)	-0.230 (0.263)	0.237 (0.254)
1(Economic crisis)	-6.568*** (0.592)		-6.032*** (0.547)		-7.376*** (1.571)	
1(Economic crisis)*VOE[public]	0.669*** (0.184)		0.536*** (0.193)		0.925** (0.382)	
1(Political crisis)		-3.095*** (0.815)		-2.994*** (0.991)		-1.580 (1.181)
1(Political crisis)*VOE[public]		0.464* (0.280)		0.557 (0.353)		0.032 (0.381)
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
R-squared	0.984	0.981	0.985	0.983	0.982	0.979
Number of country	135	135	135	135	130	130
Observations	5,924	5,924	4,990	4,990	934	934

All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. 1(Economic crisis) is a dummy variable indicating whether there was a economic crisis in the preceding year (captured by negative GDP growth or an inflation rate higher than 10%). 1(Political crisis) is a dummy variable indicating whether there was a political crisis in the preceding year, as defined by Banks and Wilson (2017). The control variables include the lagged dependent variable, leaders' age, gender, levels of education, and the polity score. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

in all circumstances. Second, higher  $\text{VOE}[\text{public}]$  leaders may be problem solvers: in hard times, more experienced leaders help bring the economy back to the normal track. To disentangle these two mechanisms, we construct two measures capturing the incidence of economic crisis and political crisis as defined in section 3.2, and study the heterogeneous impacts of  $\text{VOE}[\text{public}]$  in different circumstances.

Column (1) employs  $\text{VOE}[\text{public}]$ , the dummy indicating the incidence of economic crisis in the previous year, and the interaction between  $\text{VOE}[\text{public}]$  and the crisis dummy as explanatory variables. The crisis dummy has a mean of 0.44, so it covers a large range of circumstances of economic difficulty. The incidence of economic crisis strongly lowers economic growth. However, the negative shock is significantly neutralized by  $\text{VOE}[\text{public}]$ . Meanwhile, the coefficient for  $\text{VOE}[\text{public}]$  per se becomes small and insignificant after the interaction is controlled. We interpret this as suggestive evidence that experiences in the public sector play a better role in stabilizing the economy than boosting growth in normal times. In column (2), we investigate whether leaders'  $\text{VOE}[\text{public}]$  have different growth impacts in the face of a political crisis. We find that  $\text{VOE}[\text{public}]$  has a positive and statistically significant coefficient, and the interaction term is positive and significant at the 0.1 level. This result suggests that the effect of  $\text{VOE}[\text{public}]$  in mitigating political crisis is not correlated with its mitigating effect on economic crisis.

In columns (3) and (4), we do a similar estimation but only considering the effect of leaders who assumed power before the year of crisis. In this subsample, the intention to select a particular leader should be unrelated to policies targeting economic recovery. To the extent that the incidence of crisis is beyond the control of leaders, the interaction term may capture precisely the leader's personal competence in dealing with economic and political shocks. As the columns show,  $\text{VOE}[\text{public}]$  plays an important role of cushioning economic crises, and it has a positive, albeit insignificant, effect in neutralizing the impact of political crises. Columns (5) and (6) report the estimates based on only leaders who were elected after the incidence of crises. The results are qualitatively similar.

The empirical findings in Table 4 resonate with history. France under the presidency of Giscard d'Estaing is a suitable example of quick recovery from recession.

France was hit by the oil crisis and suffered from a negative growth rate of -1.7% in 1975. d’Estaing was elected president in May 1974. d’Estaing took several important measures to deal with the economic crisis. First, d’Estaing removed several Gaullist ministers, including his prime minister Jacques Chirac, who had posed a challenge to his political authority. Second, d’Estaing appointed several key figures, including the second prime minister Raymond Barre, who was a key figure for designing the fiscal austerity plan. Thirdly, d’Estaing’s administration proposed the eighth Five-Year-Plan, initiating industrial policies on telecommunication, information technology, and microelectronics, and nuclear energy. The public investments in these areas turned out to be instrumental for enhancing the competitiveness of the French economy. In turn, the economy rebounded in 1976 and was able to maintain an annual growth rate of 5% from 1976 to 1980.

In d’Estaing’s case, rich public sector experiences contributed to competence. Before the presidency, he had careers in the executive and legislative branches, scoring 6 on VOE[public]. He was regarded by political pundits as “an extraordinarily adept politician, who confounded opponents and enemies alike by his remarkable ability to take advantage of their internal differences” (Hollick, 1981). The other examples of recovery presided by high VOE[public] leaders include Germany under Gerhard Schroder (2004) and Angela Merkel (2010), and Hungary under Gyula Horn (1994).

## 4.6 Quality of Governance

We proceed to study the channels through which VOE[public] affects economic performance. First, leaders with higher VOE[public] may be able to adopt policies to improve the institutional environment and enhance the competitiveness of enterprises. The cases of the French and German leaders discussed in Section 4.5 fit this story. In column (1) in Table 5, we regress the logarithm of country-level TFP against VOE[public]. Consistent with the competitiveness-enhancing story, we find that VOE[public] induces faster TFP. Second, more experienced and competent leaders may be able to allocate public funds more efficiently, so they may be associated with less public spending. To test this channel, in column (2), we regress the share of government consumption over total GDP, and find that VOE[public] is negatively

Table 5: VOE and the Quality of Governance

Dependent Variable	$\log(\text{TFP})$	$\frac{G}{GDP}$	Regime Duration	Social Unrest
	(1)	(2)	(3)	(4)
VOE[public]	0.003*** (0.001)	-0.001* (0.0005)	0.228*** (0.071)	-0.013* (0.007)
Controls	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
R-squared	0.934	0.781	0.900	0.114
Number of Countries	97	135	135	135
Observations	4,107	5,779	5,779	5,779

All results are based on within estimates. The sample covers 135 countries between 1950 and 2010. The control variables include the lagged dependent variable, leaders' age, gender, and level of education, and the Polity Score. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

correlated with that share.

Third, higher VOE[public] leaders tend to be more adept politicians, as the case of d'Estaing has demonstrated. They may do a better job at unifying divided political forces and building consensus. This ability enhances political stability. In column (3), we estimate the effect of VOE[public] on regime duration, as defined in section 3.2. With control of the lagged dependent variable, the empirical model amounts to an estimation of the probability of regime survival conditional on its longevity conditional on the regime type (as measured by the Polity Score). We find that VOE[public] has a strong positive effect of enhancing regime duration. A unit increase in VOE[public] promotes the probability of regime survival by 22.8 percentage points. A related finding is presented in column (4), which shows that VOE[public] reduces the level of social unrest. Altogether, these tests suggest that public sector experiences make tangible contributions to long-term growth: higher VOE[public] leaders manage economic affairs more efficiently with less public spending, and they are more skillful at maintaining political stability and reducing societal conflicts.

## 4.7 Robustness Checks

We provide a set of robustness checks and channel tests of the growth effects of VOE[public]. We relegate these results to the appendix and briefly describe them in

this section. To address the Nickell bias due to dynamic panels, we estimate the baseline results using GMM estimation. The results in Table A2 report a larger coefficient for  $\text{VOE}[\text{public}]$  (0.545) compared with the baseline estimates. In Table A3, we account for the potential influence of persistent growth projections on political selection. To deal with this problem, we control for up to eight time lags of per capita GDP in addition to the baseline specification. The estimated results are qualitatively similar after controlling more lagged variables.

We also look into the composition of  $\text{VOE}[\text{public}]$  and try to disentangle the growth effects from each specific sector. Table A4 presents the estimates of the baseline results with the alternative use of a binary measure for  $\text{VOE}[\text{public}]$ . Instead of coding  $\text{VOE}[\text{public}]$  as a categorical variable, we focus on whether the number of experiences in different sectors reaches certain threshold. As the table shows, the variety of experience matters for the cutoff between 2 and 4. For  $\text{VOE}[\text{public}]$  greater than 4 or less than 2, the variation in the explanatory variable is not large enough to have statistical power. In Table A5, we separately estimate the effect of each experience category on growth. We find that experience as a minister, legislator, or technocrat in the central government stands alone as a significant predictor of stronger economic growth. Experience as a vice president, governor, or in the private sector has a positive and insignificant coefficient. By contrast, the estimates for military sector experience and party leader are insignificant and negative. These results suggest that the skills needed to secure a political coalition and policy compromise may be an essential dimension of leaders' competence. The experience of working in different institutional branches contributes to such skill.

Table A6 in the appendix presents a set of difference-in-difference estimates for the effects of  $\text{VOE}[\text{public}]$  in the random transition sample. Similarly as in Table 3, we find that  $\text{VOE}[\text{public}]$  has a positive and statistically significant effect on growth, with the magnitude larger than those obtained by the baseline model. The results remain robust when we exclude the transition year from the regression (column (2)). By contrast,  $\text{VOE}[\text{private}]$  does not appear to have a significant impact on growth in this setting.

In Table A7, we test whether the results are robust to region heterogeneity. It

is possible that the results are driven by patterns in specific regions. For example, newly independent Sub-Saharan African countries may have revolutionary leaders with little experience in the public sector. Column (2) excludes former socialist countries. Column (3) excludes Middle East countries lest the results are only due to monarchical rulers. We obtain similar estimates as in the baseline table. Finally, we separately estimate the effects of VOE for each decade in Table A8. The coefficients are positive for all decades and significant for the decades between 1970 and 1999. The results in Tables A7 and A8 support a robust growth effect of VOE[public] across countries and over time.

## 5 Concluding Remarks

As CEOs matter for firms' performance, national leaders matter for countries' economic performance. This paper provides systemic evidence that national leaders' work experiences matter for government performance. Using a measure of the variety of experience (VOE) of national leaders in 135 countries, the empirical analyses come to three findings. (1) Leaders' VOE in the public sector has a positive effect on growth, but that in the private sector does not. (2) The growth effect of VOE[public] is more pronounced during economic crises than in normal times. (3) More experienced leaders promote the quality of growth as well as enhance political stability. Our paper provides a rebuttal to the argument that "inside" experience in the political system is unimportant or counterproductive for economic performance. It also pushes back on the claim that business leaders are better political leaders.

The findings on the growth effects of work experience shed new lights on the debate over "institutions versus human capital" in the growth literature. As institutionalized democracies select more experienced candidates as leaders, our paper suggests that leaders' experiences may be an important omitted variable in the research examining the effects of institutions on growth. Institutions may matter for growth, but to a large extent because some institutions help select good political leaders.

## References

- Acemoglu, Daron, Suresh Naidu, Pascual Restrepo, and James Robinson,** “Democracy does cause growth,” *Journal of Political Economy*, 2018, *forthcoming*.
- Banks, Arthur and Kenneth Wilson,** *Cross-National Time-Series Data Archive*, Databanks International, 2017.
- Barro, Robert,** “Human capital and growth,” *American economic review*, 2001, *91* (2), 12–17.
- **and Jong-Wha Lee,** “IMF programs: Who is chosen and what are the effects,” *Journal of Monetary Economic*, 2005, *52* (7), 1245–1269.
- Becker, Gary,** “Investment in human capital: A theoretical analysis,” *Journal of Political Economy*, 1962, *70* (5, Part 2), 9–49.
- **, Kevin Murphy, and Robert Tamura,** “Human capital, fertility, and economic growth,” *Journal of political economy*, 1990, *98* (5, Part 2), S12–S37.
- Bertrand, Marianne and Antoinette Schoar,** “Managing with style: The effect of managers on firm policies,” *The Quarterly Journal of Economics*, 2003, *118* (4), 1169–1208.
- Besley, Timothy,** “Political selection,” *The Journal of Economic Perspectives*, 2005, *19* (3), 43–60.
- **, Jose Montalvo, and Marta Reynal-Querol,** “Do educated leaders matter?,” *The Economic Journal*, 2011, *121* (554), F205–227.
- Brockman, Paul, Hye Seung Grace Lee, and Jesus Salas,** “Determinants of CEO compensation: Generalist–specialist versus insider–outsider attributes,” *Journal of Corporate Finance*, 2016, *39*, 53–77.
- Cerra, Valerie and Sweta Saxena,** “Growth dynamics: The myth of economic recovery,” *The American Economic Review*, 2008, *98* (1), 439–457.
- Chang, Yuk Ying, Sudipto Dasgupta, and Gilles Hilary,** “CEO ability, pay, and firm performance,” *Management Science*, 2010, *56* (10), 1633–1652.

- Coase, Ronald**, “The nature of the firm,” *Economica*, 1937, 4 (16), 386–405.
- Cox, Gary and Mathew McCubbins**, *Setting the agenda: Responsible party government in the US House of Representatives*, Cambridge University Press, 2005.
- Custódio, Cláudia, Miguel Ferreira, and Pedro Matos**, “Generalists versus specialists: Lifetime work experience and chief executive officer pay,” *Journal of Financial Economics*, 2013, 108 (2), 471–492.
- Dewan, Torun and David Myatt**, “Qualities of leadership: Communication, direction and obfuscation,” *American Political Science Review*, 2008, 102 (3), 351–368.
- Dreher, Axel, Michael Lamla, Sarah Lein, and Frank Somogyi**, “The impact of political leaders’ profession and education on reforms,” *Journal of Comparative Economics*, 2009, 37 (1), 169–193.
- Fama, Eugene**, “Agency problems and the theory of the firm,” *Journal of Political Economy*, 1980, 88 (2), 288–307.
- Glaeser, Edward, Rafael La Porta, Florencio Lopez de Silanes, and Andrei Shleifer**, “Do institutions cause growth?,” *Journal of Economic Growth*, 2004, 9 (3), 271–303.
- Goemans, Henk, Kristian Skrede Gleditsch, and Giacomo Chiozza**, “Introducing Archigos: A dataset of political leaders,” *Journal of Peace Research*, 2009, 46 (2), 269–283.
- Göhlmann, Silja and Roland Vaubel**, “The educational and occupational background of central bankers and its effect on inflation: An empirical analysis,” *European Economic Review*, 2007, 51 (4), 925–941.
- Hayo, Bernd and Florian Neumeier**, “Political leaders’ socioeconomic background and fiscal performance in Germany,” *European Journal of Political Economy*, 2014, 34, 184–205.
- Hermalin, Benjamin**, “Toward an economic theory of leadership: Leading by example,” *The American Economic Review*, 1998, pp. 1188–1206.

- Hollick, Julian**, “France under Giscard d’Estaing 欽嶽Retrospect,” *The World Today*, 1981, 37 (6), 204–210.
- Holmström, Bengt**, “Managerial incentive problems: A dynamic perspective,” *The Review of Economic Studies*, 1999, 66 (1), 169–182.
- Jochimsen, Beate and Sebastian Thomasius**, “The perfect finance minister: Whom to appoint as finance minister to balance the budget,” *European Journal of Political Economy*, 2014, 34, 390–408.
- Jones, Benjamin and Benjamin Olken**, “Do Leaders Matter? National Leadership and Growth Since World War II,” *The Quarterly Journal of Economics*, 2005, 120 (3), 835–864.
- Lazear, Edward**, “Firm-specific human capital: A skill-weights approach,” *Journal of Political Economy*, 2009, 117 (5), 914–940.
- Marshall, Monty, Ted Robert Gurr, and Keith Jagers**, *Political Regime Characteristics and Transitions, 1800-2016*, Center for Systemic Peace, 2017.
- Murphy, Kevin and Jan Zabojnik**, “CEO pay and appointments: A market-based explanation for recent trends,” *The American Economic Review*, 2004, 94 (2), 192–196.
- Neustadt, Richard**, *Presidential power and the modern presidents: The politics of leadership from Roosevelt to Reagan*, Simon and Schuster, 1991.
- Papaioannou, Elias and Gregorios Siourounis**, “Democratisation and growth,” *The Economic Journal*, 2008, 118 (532), 1520–1551.
- Pritchett, Lant**, “Understanding patterns of economic growth: Searching for hills among plateaus, mountains, and plains,” *World Bank Economic Review*, 2000, 14 (2), 221–250.
- Przeworski, Adam**, *Political Institutions and Political Events (PIPE): A Data Set*, New York University, 2013.

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

**Stokes, Susan**, *Mandates and democracy: Neoliberalism by surprise in Latin America*, Cambridge University Press, 2001.

**Teorell, Jan, Stefan Dahlberg, Holmberg Sören, Bo Rothstein, Anna Khomenko, and Richard Svensson**, *The Quality of Government Standard Dataset, version 2016*, University of Gothenburg: The Quality of Government Institute, 2016.

**Yao, Yang and Tianyang Xi**, *National Leaders and the Political Selection, 1950-2010: a Data Set*, Peking University, 2015.

Table A1: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max	Data Source
Panel A: Leaders' Characteristics						
VOE[pub]	5779	2.42	1.21	0	7	1
VOE[private]	5736	0.76	0.97	0	4	1
Age	5777	56.81	11.10	18	91	1
1(Female)	5779	0.02	0.15	0	1	1
1(College)	5779	0.31	0.46	0	1	1
1(Grad School)	5779	0.67	0.47	0	1	1
Years of Public Sector Experience	5772	20.15	12.60	0	67	1
1(Vice President)	5779	0.15	0.36	0	1	1
1(Minister)	5779	0.56	0.50	0	1	1
1(Legislator)	5779	0.47	0.50	0	1	1
1(Governor)	5779	0.13	0.33	0	1	1
1(Party)	5779	0.45	0.50	0	1	1
1(Central)	5779	0.27	0.45	0	1	1
1(Military)	5779	0.39	0.49	0	1	1
1(Private)	5779	0.31	0.46	0	1	1
Panel B: Country Characteristics						
log(GDP per Capita)	5779	8.30	1.26	5.32	11.82	2
growth	5779	0.022	0.064	-0.671	0.926	
Polity Score	5774	1.48	7.47	-10	10	3
1(Economic Crises)	5779	0.44	0.50	0	1	2
1(Political Crises)	5779	0.15	0.36	0	1	4
log(K per Capita)	5779	9.29	1.36	5.63	12.24	2
log(TFP)	4130	-0.07	0.26	-1.44	1.67	2
Share of G in GDP	5779	0.20	0.11	0.02	1.56	2
Regime Durability	5779	23.09	28.84	0	201	4
Unrest	5779	0.30	0.46	0	1	4

Sources: 1. Yao and Xi (2015); 2. Penn World Table 8.1; 3. Marshall et al. (2017); 4. Banks and Wilson (2017).

Table A2: GMM Estimates

	Dependent variable: log[GDP per Capita]			
dependent variable lagged	1 period	2 periods	4 periods	8 periods
	(1)	(2)	(3)	(4)
VOE[public]	0.545*** (0.132)	0.724*** (0.220)	0.555** (0.230)	0.548*** (0.196)
Age	0.011 (0.018)	-0.032 (0.035)	-0.031 (0.036)	-0.044 (0.036)
1(Female)	0.418 (0.836)	-1.03 (1.37)	-1.39 (1.41)	-2.89 (1.91)
1(College)	-0.673 (0.828)	-2.09 (2.32)	-1.53 (2.49)	-0.830 (2.29)
1(Grad School)	0.399 (0.356)	0.701 (0.691)	0.442 (0.749)	0.473 (0.702)
Lag Polity Score	-0.040 (0.037)	-0.015 (0.051)	-0.005 (0.059)	0.078 (0.057)
lag log(GDP per Capita)	94.9*** (1.01)	96.4*** (0.814)	96.4*** (0.832)	96.4*** (0.830)
AR(2) test p-value	0.011	0.197	0.945	0.458
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
Number of countries	135	135	135	135
Observations	5,772	5,691	5,411	4,865

All results are based on difference GMM estimation. For each column, p-values are reported for the AR(2) test of the null hypothesis that the error terms are not serially correlated. The sample covers 135 countries for the 1950-2010 period. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A3: Long Term Growth and Regime Change

Dependent Variable	log(GDP per Capita)			
	Lag 1	Lag 1-2	Lag 1-4	Lag 1-8
	(1)	(2)	(3)	(4)
VOE[public]	0.376*** (0.107)	0.231*** (0.0869)	0.243*** (0.0813)	0.227*** (0.0812)
Controls	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
R-squared	0.981	0.982	0.982	0.981
Number of Countries	135	135	135	134
Observations	5,924	5,797	5,537	5,016

All results are based on within estimates. The sample covers 135 countries for the 1950-2010 period. The control variables include the lagged dependent variable, leaders' age, gender, and level of education, and the polity score. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A4: Robustness: Binary Measures

	Dependent variable: log[GDP per Capita]					
	(1)	(2)	(3)	(4)	(5)	(6)
VOE[public] $\geq$ 1 (96.23%)	0.0147 (0.594)					
VOE[public] $\geq$ 2 (71.9%)		0.679** (0.265)				
VOE[public] $\geq$ 3 (41.74%)			0.690*** (0.227)			
VOE[public] $\geq$ 4 (18.7%)				0.573* (0.296)		
VOE[public] $\geq$ 5 (3.78%)					0.0371 (0.460)	
VOE[public] $\geq$ 6 (0.01%)						-0.294 (0.386)
Country FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
R-squared	0.981	0.981	0.981	0.981	0.981	0.981
Number of countries	135	135	135	135	135	135
Observations	6,106	6,106	6,106	6,106	6,106	6,106

All results are based on within estimates. The sample covers 135 countries for the 1950-2010 period. The explanatory variables are the dummy variables indicating whether VOE[public] is greater than or equal to specific values. The sample averages of these dummy variables are reported in the parentheses. The control variables include the lagged dependent variable, leaders' age, gender, and level of education, and the Polity Score. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A5: What Kinds of Experience Matter?

	log[GDP per Capita]								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Vice President	0.270 (0.368)								0.102 (0.387)
Minister		0.620** (0.260)							0.585** (0.272)
Legislator			0.571* (0.292)						0.597** (0.297)
Governor				0.421 (0.394)					0.509 (0.363)
Party leader					-0.136 (0.270)				-0.135 (0.274)
Central Government						0.744*** (0.205)			0.722*** (0.217)
Military							-0.019 (0.366)		0.197 (0.382)
Private								0.330 (0.237)	0.477* (0.263)
Lag log[GDP per Capita]	96.9*** (0.782)	96.9*** (0.773)	96.9*** (0.802)	97.0*** (0.763)	97.0*** (0.765)	96.9*** (0.769)	97.0*** (0.781)	96.9*** (0.774)	96.7*** (0.827)
Controls	Y	Y	Y	Y	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
R-squared	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981	0.981
Number of Countries	135	135	135	135	135	135	135	135	135
Observations	6,060	6,005	5,986	6,009	5,990	6,067	5,968	5,966	5,895

All results are based on within estimates. The sample covers 135 countries for the 1950-2010 period. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A6: Regression on Random Transitions

	Dependent variable: log[GDP per Capita]			
	10-year window	Excluding transition year	10-year window	Excluding transition year
	(1)	(2)	(3)	(4)
VOE[public]	1.263** (0.616)	1.748*** (0.612)		
VOE[private]			0.929 (0.590)	1.126 (0.747)
Controls	Y	Y	Y	Y
Country FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y
R-squared	0.942	0.951	0.937	0.944
Number of countries	43	43	43	43
Observations	318	275	325	282

The sample covers all countries that had experienced at least one random leadership transition during the 1950-2010 period. The control variables include the lagged logarithm of GDP per capita, age, gender, education level of leaders, and the Polity Score. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A7: Region Heterogeneity

Dependent Variable	log(GDP per Capita)		
	Exclude Africa	Exclude Former-Socialist	Exclude Middle-East
	(1)	(2)	(3)
VOE[public]	0.380*** (0.132)	0.348*** (0.112)	0.342*** (0.106)
Controls	Y	Y	Y
Country FE	Y	Y	Y
Year FE	Y	Y	Y
R-squared	0.984	0.981	0.983
Number of Countries	95	129	131
Observations	4,074	5,574	5,635

All results are based on within estimates. The sample covers 135 countries for the 1950-2010 period. The control variables include the lagged logarithm of GDP per capita, age, gender, education level of leaders, and the Polity Score. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .

Table A8: Time Heterogeneity

Dependent Variable	log(GDP per Capita)				
	60-69	70-79	80-89	90-99	00-10
	(1)	(2)	(3)	(4)	(5)
VOE[public]	0.450 (0.307)	0.569** (0.279)	0.659*** (0.221)	0.805** (0.377)	0.263 (0.196)
Controls	Y	Y	Y	Y	Y
Country FE	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y
R-squared	0.856	0.797	0.766	0.754	0.942
Number of Countries	83	106	110	135	133
Observations	780	1,059	1,171	1,372	1,411

All results are based on within estimates. The sample covers 135 countries. The control variables include the lagged logarithm of GDP per capita, age, gender, education level of leaders, and the Polity Score. All the reported coefficients are multiplied by 100. Standard errors clustered at the country level are reported in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$ .