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

JEL: E61, H11, M12, O20

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This paper studies how work experiences of national leaders shape economic performance. We propose that the variety of experience (VOE) from the public sectors is an essential indicator of leader's competence over managing economic affairs. Using a newly collected data on national leaders' career backgrounds, we find that the index of VOE has a positive effect on growth. That effect is more pronounced in helping economy recover from negative growth shocks. More experienced leaders manage economy more efficiently, and they have a better record of maintaining political stability. By contrast, we do not find evidence that the experiences from the private sectors particularly matter for growth.

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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 researches establishes empirical linkages between leaders' specific career experiences and their policy preferences (Barro and Lee, 2005; Dreher et al., 2009; Göhlmann and Vaubel, 2007). However, there has been rare systemic account on what aspects of career experience are most relevant for economic performance. Our paper investigates this question through a newly collected data on the career backgrounds of national leaders.

We find that the pre-tenure work experience in the public sectors matters, but that from the private sectors does not. Specifically, the variety of work experiences by leaders from 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 from the public and private sectors. We define this measure as the variety-of-experience (VOE) index of leaders, and empirically examine their effects on growth.

Standard growth regressions based on a sample of 135 countries for the 1950-2010 period obtains a strong positive effect of VOE from the public sectors on growth. In the baseline model, an unit rise in the VOE index is associated with increase in GDP growth by at least 0.35 percentage point. By contrast, national leaders' experiences from the private sectors do not make economy grow faster. Leaders' age and seniority, as measured by the pre-tenure years spent in the public sector, also do not promote economic performance. An examination on the dynamic patterns identifies persistent effects of leaders' VOE on the long term growth, but not on the pre-existing 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 a 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 can be affected by the pre-existing trends of economic growth or crisis. The empirical results show that it is not the case. Second, we follow the identification strategy by 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 sectors, but not that from the private sectors.

The theoretical literature on managerial economics and political science provide insights for explaining the findings on the growth effects of leaders' public-sector experience. First, exposure to policy-making and governing experiences in different positions before assuming the highest office may prepare leaders a "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." Second, national leaders with richer pre-tenure experience in the public sector tend to be an "insider" of the political system. They have an advantage over acquiring tacit knowledge within the political networks, including how to work across different political spectrums to solve crises. As a result, more experienced leaders should be politically more resilient, and they do a better job at smoothing out 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 higher VOE from the public sectors helps recover from economic downturns due to crises. Secondly, we show that the VOE from the public sectors enhances the quality of economic growth and social cohesion. Specifically, the VOE is positively associated with the 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 growth effects of leaders' experiences shed 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 its effectiveness in selecting good leaders (Besley, 2005). In turn, politicians' records in the public sector provides an informative base for the electorate to evaluate their credential as good leaders. History provides a number of examples of national leaders with rich experiences from the public sectors, such as Clement Attlee in the United Kingdom and Giscard d'Estaing in France.[1] They had a very successful

[1]According to our definition, Attlee has a score of 7 and d'Estaing has a score of 6 on VOE[public], the

record 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 political stage, however, the conventional model of political selection is facing a challenge. During economic downturns, media often popularized arguments that business tycoons may become good leaders for running economy. In contrast, veteran politicians with rich experience from the public sectors tend to be accused for causing economic recessions. This paper provides a rebuttal to the claim that public sector experiences does not matter. Experience begets competence. This line echoes with 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 CEOs. Both CEOs and political leaders 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). Contestable labour market provides a mechanism for pricing competence, which can be inferred through CEOs' past performance (Fama, 1980; Holmström, 1999). For national leaders, competence are not readily observable because they have no opportunity to serve the highest office in other countries. As a result, the electorate (selectorate) lack job records to infer leaders' competence in political selection, and the pre-tenure work experiences become meaningful signals of their political competence.

The literature lends supports to the theoretical insights that more experienced leaders are more capable of promoting growth. The first mechanism is that relevant experiences enhances the competence over strategic decision-making. Becker (1962) considers work experience to be an important source of human capital aside from 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 from diverse capacities and areas help business leaders acquire multi-facet knowledge and contribute to their generalist human capital.

The recent works on corporate governance attest to an empirical linkage between the variety of work experience and the competence for CEOs. Murphy and Zabojnik (2004) find significant increase in both CEO pay and outside hiring among large companies in the recent

top quantile in the distribution of VOE[public] scores.

decades. They attribute this pattern to rising importance of the general management skill, which involves knowledge from diverse backgrounds, in shaping firm values. Echoing with this argument, Custódio et al. (2013) find a 19% relative pay premium for generalist CEOs of Standard and Poor's 1,500 firms. They measure the 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 generalist stems from complex strategic situations of large corporations.

The second 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 at setting agenda, building consensus, and making deals (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 of inducing 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 the costly effort (leading by example). Dewan and Myatt (2008) model the 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 negotiation cost among government branches. This translates into an institutional advantage in dealing with economic shocks.

The literature of political science and political economy report ample evidence that 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 have been rare empirical research, however, on how multi-faceted work experiences affect economic performance. By investing 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 on economic growth (Barro, 2001; Becker et al., 1990; Glaeser et al., 2004).

3 Data and Specification

3.1 Leaders' Experiences

The information of leaders' work experiences are manually collected from 135 countries for the period between 1950 and 2010. By national leaders, we focus on the head of executive branch in the central government, which is president in presidential systems and the prime minister (premier) in parliamentary systems. For leaders in semi-presidential systems, we follow the definition in Przeworski (2013) to identify president as the head of government if the constitutional power to remove the prime minister resided 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 Communist Party as an effective leader.

We code seven categories for leaders' work experiences from the public sectors prior to their current political term. *Vice president* is a dummy variable indicating whether the incumbent leader had served as the vice president (or vice prime minister in parliamentary systems). *Minister* is a dummy variable indicating whether the incumbent leader had served as a minister or head of a bureaucratic agency. *Legislator* captures whether the leader had served as a state legislator in the lower or upper chamber. *Local governor* specifies whether the leader had executive experience in a subnational government. *Party leader* measures whether the leader had served as the general secretary or chairman of a political party. *Central government* indicates whether the leader had worked as a technocrat in any bureaucratic office of the central government. *Military* captures whether the leader had served in the military sector or intelligence agency.[2]. Based on these measures, we construct an index for the variety of (work) experiences through a simple counting scheme.

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

In the above expression, exp_i refers to the dummy variable for a specific experience category i. So VOE[Public] is a categorical variable ranges in $\{0, 1, ..., 7\}$.

We use a similar approach to construct an index for work experiences from the private sectors. We code whether the leader had any pre-tenure work experience from each one of the eight sectors, separately: *Agriculture* indicates that the leader had worked in farming,

[2] A chief executive who is simultaneously commander-in-chief by constitution (such as US presidents) is not considered as having experience of military service. For example, the military experience is registered for Eisenhower and George Bush, but not for Obama.

forestry, fishery, and animal husbandry industries; *Manufacture* indicates whether the leader had worked in the manufacturing sector; *Science* is a dummy variable on whether the leader had worked in a lab or research institute; *Finance* indicates whether the leader had worked in the financial sector; *Law* indicates whether the leader had worked in a law firm or law-related industries; *Media* indicates whether the leader had any work experience with media; *NGO* indicates whether the leader had worked in NGOs; *Art-sport* indicates whether the leader had any previous careers related to arts or sports. The variety of experience from the private sectors is obtained through summing up 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 of GDP and population are obtained from Penn World Table 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*, that may confound the VOE. It is possible that the competence to promote growth is proportional to the life experience and the 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 are more in favor of political insiders when economic performance is satisfactory. VOE may be an indicator of political insider, not the 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 also provide 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 the normal time 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 is 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 the information of capital stock from PWT 8. *log(TFP)* measures the logarithm of real total factor productivity (TFP) in national account. $\frac{G}{GDP}$ measures the Share of government consumption over total GDP. *Regime Durability* is computed as the number of years since the most recent regime change, as defined by a three point change in the polity score within the window of three years or less), or the time length 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 was any social riots, registered by *domestic6* and *domestic7* in the (Banks and Wilson, 2017). Finally, both 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 sample. Let y be the main dependent variable, the logarithm of per capita GDP, the growth effect of the VOE is estimated by the following equation.

$$\mathrm{y_{ij,t}} = \alpha \cdot \mathrm{y_{ij,t-1}} + \theta \cdot \mathrm{VOE[public]_{jt}} + \mathrm{X_{ij,t}} \cdot \beta + \mathrm{u_i} + \mathrm{v_t} + \epsilon_{\mathrm{ijt}} \tag{1}$$

In equation (1), $\mathrm{y_{ij,t}}$ is the logarithm of per capita GDP in country i with leader j during year t, $\mathrm{y_{ij,t-1}}$ is the lagged dependent variable. $\mathrm{VOE[public]_{jt}}$ is the index of experience as defined in Section 3.1. $\mathrm{X_{ij,t}}$ includes a set of control variables, including leaders' personal characteristics and the polity score. $\mathrm{u_i}$ and $\mathrm{v_t}$ respectively represents the country and year fixed effects. Inclusion of the country and year fixed effects help eliminate the omitted variable bias that the specific to a country or time period. The standard Nickell bias due to the control of lagged dependent variable is mitigated through a long panel ($\mathrm{T} \geq 30$). 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 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 predecessor died in office due to accidents 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:

$$\mathrm{g_{iq,t}} = \Psi_{\mathrm{q}}^{\mathrm{PRE}} \cdot 1[\mathrm{PRE}]_{\mathrm{q,t}} + \Psi_{\mathrm{q}}^{\mathrm{POST}} \cdot 1[\mathrm{POST}]_{\mathrm{q,t}} + \mathrm{u_i} + \mathrm{v_t} + \epsilon_{\mathrm{izt}} \tag{2}$$

$1[\mathrm{PRE}]_{\mathrm{q,t}}$ and $1[\mathrm{POST}]_{\mathrm{q,t}}$ are dummy variables respectively indicate the pre-transition and post-transition period for each scenario of leadership transition. The estimated coefficient $\Psi_{\mathrm{q}}^{\mathrm{PRE}}$ and $\Psi_{\mathrm{q}}^{\mathrm{POST}}$ represent the average leader effect before and after the transition. The Wald-statistics corresponding to the chi-squared test is computed as the following.

$$\mathrm{W} = \frac{1}{\mathrm{N_q}} \sum_{\mathrm{q}=1}^{\mathrm{N_q}} \frac{(\overline{\mathrm{POST}}_{\mathrm{q}} - \overline{\mathrm{PRE}}_{\mathrm{q}})^2}{2(\hat{\sigma}_{\epsilon \mathrm{i}}^2/\mathrm{T})} \tag{3}$$

$\hat{\sigma}_{\epsilon \mathrm{i}}^2$ 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. $\mathrm{W} \times \mathrm{N_q}$ 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 VOE[public] as the main explanatory variable, only controlling for the lagged dependent variable and the country and year fixed effects. VOE[public] is found to have a significantly positive estimated coefficient, with one category increase in VOE[public] leading to 0.353 percentage point increase in the growth rate. This estimate implies that one standard deviation in leader's VOE[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, including age, gender, the level of education, as well as the polity score. The estimate for VOE[public] is qualitatively the same, and personal characteristics other than VOE[public] do not appear to enhance growth. 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., 2017; Papaioannou and Siourounis, 2008). Because

democracies tend to select leaders with a higher degree of VOE[public] than autocracies do, and leaders with higher VOE[public] help economy grow faster, democracies may enhance growth by selecting more experienced leaders. Column (3) includes leaders' previous political terms as one type of public-sector experience for the VOE[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 VOE[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 economy growth is satisfactory. A positive coefficient for 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 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 of VOE[public] than Emmanuel Macron does, despite that fact that she is ten years older, and has spent 13 years more in the public sector than Emmanuel Macron as of 2017.[3]

In comparison, we do not find empirical support that work experience in the private sectors help economy grow faster. The estimated coefficient for VOE[private] reported in Column (5) is negative and insignificant. In Column (6) we employ both VOE[public] and VOE[private] as explanatory variables. The coefficient for VOE[public] remains positive and significant. The coefficient for VOE[private] becomes positive, not small and statistically insignificant. This result suggests that work experiences from the public sectors may be more decisive than the private sector experiences for enhancing economic performance.

4.2 Dynamic effects

The main challenge to identification is that national leader 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

[3]Following our definition of VOE[main], Macron has three different work experiences prior to his bidding for the French presidency: he had been the Minister of Economy and Finance, the leader of a political party (En Marche!). His VOE[public] score is then 2. Le Pen has only one public sector career before: the president of National Front. So her 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***	0.359***				0.396***
	(0.108)	(0.107)				(0.104)
VOE[public+presidency]			0.297***			
			(0.104)			
Public-years				0.001		
				(0.012)		
VOE[private]					-0.044	0.026
					(0.146)	(0.149)
Age		0.009	0.013	0.014	0.008	0.003
		(0.012)	(0.012)	(0.012)	(0.011)	(0.011)
1(Female)		0.222	0.223	0.270	0.164	0.205
		(0.578)	(0.583)	(0.606)	(0.572)	(0.582)
1(College)		0.631	0.724	0.705	0.661	0.598
		(0.661)	(0.643)	(0.677)	(0.694)	(0.711)
1(Grad School)		0.470	0.540	0.564	0.495	0.397
		(0.642)	(0.628)	(0.648)	(0.673)	(0.689)
Lag Polity Score		-0.029	-0.028	-0.019	-0.010	-0.025
		(0.026)	(0.025)	(0.027)	(0.025)	(0.026)
Lag log(GDP Per Capita)	96.88***	96.92***	96.94***	97.04***	96.66***	96.53***
	(0.793)	(0.787)	(0.780)	(0.740)	(0.727)	(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 country	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 estimate. The sample covers 135 countries for the period between 1950 to 2010. VOE[public] counts the sum of work experiences of leading a government sector (such as being a minister, legislator, governor, etc). VOE[Private] registers only the variety of work experiences from the private sectors. For each column, we report the p-value for 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

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 the growth for the years before and after the leader's term.

$$\begin{aligned} \mathrm{y_{ij,t}} = & \sum_{1\le\tau\le5} \theta^1_\tau \cdot \mathrm{VOE_j} \cdot \mathrm{POST_{ijt,t_1+\tau}} + \theta^1_6 \cdot \mathrm{VOE_j} \cdot \mathrm{POST_{ijt,t_1+6}} \\ + & \sum_{1\le\pi\le5} \theta^2_\pi \cdot \mathrm{VOE_{j+1}} \cdot \mathrm{PRE_{i,j+1,t,t_2-\pi}} + \theta^2_6 \cdot \mathrm{VOE_{j+1}} \cdot \mathrm{PRE_{i,j+1,t,t_2-6}} \\ & + \alpha \cdot \mathrm{y_{ij,t-1}} + \mathrm{X_{ij,t}} \cdot \beta + \mathrm{u_i} + \mathrm{v_t} + \epsilon_{\mathrm{ijt}} \end{aligned} \tag{4}$$

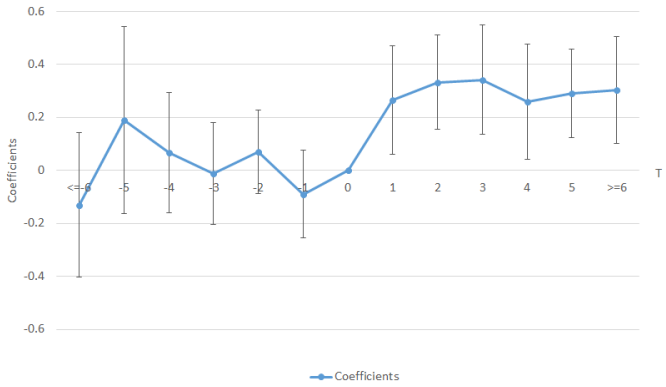
In equation (4), $\mathrm{y_{ij,t}}$ is the logarithm of per capita GDP of country i under the leadership of j in year t. $\sum_{1\le\tau\le5} \theta^1_\tau \cdot \mathrm{VOE}_j \cdot \mathrm{POST}_{ijt,t_1+\tau}$ capture the dynamic long term effect of leaders' VOE. $\mathrm{POST}_{ijt,t_1+\tau}$ is a dummy variable indicating whether year t was τ years post year t_1, when is the starting year of leader j's current term. We bundle the period after six years into one dummy variable. By a similar token, $\mathrm{VOE}_{j+1} \cdot \mathrm{PRE}_{i,j+1,t,t_2-\pi}$ model the pre-trending effects 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 the forthcoming of strong economic performance, we should expect a strong pre-trending effect of VOE[public]. Otherwise, the estimated coefficients of θ^2_π should not be significantly different from zero.

Figure 1 presents the estimated results from equation (4). It is evident that VOE[public] do not have any significant growth effects in the years leading to the leaders' current term. By contrast, VOE[public] have 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

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



Note: The figures present 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 her current term. The coefficients for $t = 1, 2...$ report the estimated effect of the leader j's VOE on the years following 0. The coefficients for $t = -1, -2...$ report the estimated effect of the VOE[public] on the growth in the preceding years.

rival candidate is defined as one of the largest vote share among all losing candidates. With the information of the major rivals' work experiences from the public sectors, we are able to construct a 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.

We adopt three set of measures for pre-existing 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 Column (3) and (4), we adopt a dummy for economic recession, which is coded as 1 if the annual growth is negative as reported by PWT 8. Column (5) and (6) expand the definition for recession to crisis, which include the scenario when the inflation rate is higher than 10%. As Table 2 shows, either dummy of recession or economic crisis is significant correlated with the outcome of political selection. 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

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 recession			-0.052			
			(0.086)			
Lag2 recession			0.096			
			(0.083)			
Lag3 recession			0.000			
			(0.080)			
Avg. Lag1-3 recession				0.0568		
				(0.099)		
Lag1 crisis					-0.057	
					(0.096)	
Lag2 crisis					0.188**	
					(0.090)	
Lag3 crisis					-0.067	
					(0.094)	
Avg. Lag1-3 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. ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

office by accidents or natural causes. Because the exits of the leaders were not planed ahead, the transitions are quasi-random. This approach identifies 47 scenarios of quasi-random transitions for 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 as the model specified by Equation (2), and compute their difference, $\widehat{\Psi_q^{POST}} - \widehat{\Psi_q^{PRE}}$, for each different types of transitions. As Table 3 reports, economy grows nearly 2 percentage points faster after transition to a leader with higher VOE[public]. The Wald-test reports a Chi-squared statistics of 28.86 and a p-value of 0.069 for the growth difference between 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 from the private sectors 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 Statistics	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 Statistics	0.253	0.892	0.126
Number of Transitions	7	12	28

Note: The sample covers 135 countries for the period between 1950 to 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; (3) transition between two leaders with the same score of VOE.

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	0.299***	0.054	0.256**	-0.230	0.237
	(0.106)	(0.108)	(0.120)	(0.126)	(0.263)	(0.254)
1(Economic crisis)	-6.568***		-6.032***		-7.376***	
	(0.592)		(0.547)		(1.571)	
1(Economic crisis)*VOE[public]	0.669***		0.536***		0.925**	
	(0.184)		(0.193)		(0.382)	
1(Political crisis)		-3.095***		-2.994***		-1.580
		(0.815)		(0.991)		(1.181)
1(Political crisis)*VOE[public]		0.464*		0.557		0.032
		(0.280)		(0.353)		(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

Note: 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

4.5 Times of Crisis

Economic growth follows different dynamic patterns in different countries. Cross-country researches have 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 can be driven by two underlying mechanisms. First, the higher VOE[public] leaders do a genuinely better job at stimulating: that they make economy grow faster in all circumstances. Second, the higher VOE[public] leaders are 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 impact of VOE[public] in different circumstances.

Column (1) employ VOE[public], the dummy indicating the incidence of economic crisis in the previous year, and the interaction between VOE[public] and the crisis dummy as explanatory variables. Note 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. The negative shock, however, is significantly neutralized by VOE[public]. Meanwhile, the coefficient for VOE[public] *per se* becomes small and insignificant after the interaction is controlled. We interpret this as suggestive evidence that experiences from the public sectors play a better role in stabilizing the economy than boosting growth in normal times. In Column (2), we investigate whether leaders' VOE[public] have different growth impacts in the face of a political crisis. We find that VOE[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 VOE[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 are beyond the control of leaders, the interaction term may capture precisely the personal competence for dealing with economic and political shocks. As the columns show, VOE[public] plays an important role of cushioning economic crisis, and it has a positive, albeit insignificant, effect in neutralizing the impact of political crisis. 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 by -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 a number of 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 of the fiscal austerity plan. Thirdly, his 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 of 5% from 1976 to 1980.

In d'Estaing's case, rich public-sector experiences contributed to the competence. Before the presidency, he had careers in both the executive and legislative branch, 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 The Quality of Governance

We proceed to study through what channels VOE[public] affect economic performance. First, leaders with higher VOE[public] may be able to adopt policies to improve institutional environment and enhance the competitiveness of enterprises. The cases of French and German leaders discussed the Section 4.5 fit into this story. In Column (1) of Table 5, we regress the logarithm of country-level total factor productivity (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 correlated with that share.

Thirdly, higher VOE[public] leaders tend to be more adept politicians, as the case of

Table 5: VOE and the quality of governance

Dependent Variable	log(TFP)	$\frac{G}{GDP}$	Regime Duration	Social Unrest
	(1)	(2)	(3)	(4)
VOE[public]	0.003***	-0.001*	0.228***	-0.013*
	(0.001)	(0.0005)	(0.071)	(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

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

d'Estaing has demonstrated. So 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 the control of lagged dependent variable, the empirical model amounts to an estimation on 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. An 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 public sector experiences make tangible contributions to the 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 channels tests on 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 the generalized method of moments (GMM) estimation. The results in Table A2 report a larger coefficient for VOE[public] (0.545) compared with the baseline estimates. In Table A3, we accounts for the potential influence of persistent growth projectiles 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 VOE[public] and try to disentangle the growth effects from each specific sector. Table A4 presents the estimates of baseline results with the alternative use of binary measure for VOE[public]. Instead of coding VOE[public] as a categorical variable, we focus on whether the number of experiences from different sectors reaches certain threshold. As the table shows, the variety of experience matters for the cutoff between 2 and 4. For VOE[public] larger 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 the experience as minister, legislator, and technocrat in the central government stand alone as significant predictors of stronger economic growth. Experience as vice president, governor, and those from the private sector have a positive and insignificant coefficient. By contrast, the estimates for the military sector experience and party leader are insignificant and negative. These results suggest that the skill to secure a political coalition and policy compromise may be 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 VOE[public] on in the random transition sample. Similar as in Table 3, we find that VOE[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 regression (Column (2)). By contrast, VOE[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 Africa countries may have revolutionary leaders with few experience in the public sectors. Column (2) excludes former-socialist countries. Column (3) exclude Middle East countries lest that 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. It is shown that the coefficients are positive for all decades and significant for the decades between 1970 and 1999. The results in Table A7 and A8 support a robust growth effect of VOE[public] cross 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 variety of experience (VOE) from national leaders in 135 countries, the empirical analyses come to three findings. (1) Leaders' VOE from the public sectors has a positive effect on growth, but that from the private sectors 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 only counterproductive for economic performance. It also pushes back on the claim that business leaders are better political leaders.

The finding on the growth effects of work experience shed new lights on the debate of "institutions versus human capital" in the growth literature. As institutionalized democracies pick out more experienced candidates as leader, 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.

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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***	0.724***	0.555**	0.548***
	(0.132)	(0.220)	(0.230)	(0.196)
Age	0.011	-0.032	-0.031	-0.044
	(0.018)	(0.035)	(0.036)	(0.036)
1(Female)	0.418	-1.03	-1.39	-2.89
	(0.836)	(1.37)	(1.41)	(1.91)
1(College)	-0.673	-2.09	-1.53	-0.830
	(0.828)	(2.32)	(2.49)	(2.29)
1(Grad School)	0.399	0.701	0.442	0.473
	(0.356)	(0.691)	(0.749)	(0.702)
Lag Polity Score	-0.040	-0.015	-0.005	0.078
	(0.037)	(0.051)	(0.059)	(0.057)
lag log(GDP Per Capita)	94.9***	96.4***	96.4***	96.4***
	(1.01)	(0.814)	(0.832)	(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 country	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 on the null hypothesis that the error terms are not serially correlated. The sample covers 135 countries for the period between 1950 to 2010. 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 Projectiles of GDP 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***	0.231***	0.243***	0.227***
	(0.107)	(0.0869)	(0.0813)	(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

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Table A4: Robustness: Binary Measures

	Dependent variable: log[GDP Per Capita]					
	(1)	(2)	(3)	(4)	(5)	(6)
VOE[public]≥ 1 (96.23%)	0.0147					
	(0.594)					
VOE[public]≥2 (71.9%)		0.679**				
		(0.265)				
VOE[public]≥3 (41.74%)			0.690***			
			(0.227)			
VOE[public]≥4 (18.7%)				0.573*		
				(0.296)		
VOE[public]≥5 (3.78%)					0.0371	
					(0.460)	
VOE[public]≥ 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 country	135	135	135	135	135	135
Observations	6,106	6,106	6,106	6,106	6,106	6,106

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. The explanatory variables are the dummy variables indicating whether VOE[public] is greater than or equal to specific values. The sample average of these dummy variables are reported in the parentheses. 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Table A5: What kinds of experience matter?

	log[GDP Per Capita]								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Vice President	0.270								0.102
	(0.368)								(0.387)
Minister		0.620**							0.585**
		(0.260)							(0.272)
Legislator			0.571*						0.597**
			(0.292)						(0.297)
Governor				0.421					0.509
				(0.394)					(0.363)
Party leader					-0.136				-0.135
					(0.270)				(0.274)
Central Government						0.744***			0.722***
						(0.205)			(0.217)
Military							-0.019		0.197
							(0.366)		(0.382)
Private								0.330	0.477*
								(0.237)	(0.263)
Lag log[GDP Per Capita]	96.9***	96.9***	96.9***	97.0***	97.0***	96.9***	97.0***	96.9***	96.7***
	(0.782)	(0.773)	(0.802)	(0.763)	(0.765)	(0.769)	(0.781)	(0.774)	(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

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. 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**	1.748***		
	(0.616)	(0.612)		
VOE[private]			0.929	1.126
			(0.590)	(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 country	43	43	43	43
Observations	318	275	325	282

Note: 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.

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***	0.348***	0.342***
	(0.132)	(0.112)	(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

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1950 to 2010. 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	0.569**	0.659***	0.805**	0.263
	(0.307)	(0.279)	(0.221)	(0.377)	(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

Note: All results are based on within estimate. The sample covers 135 countries for the period between 1960 and 2010. 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. $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.